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ABSTRACT

This research was designed to serve two major purposes: (1) to create a substantial library of theoretically neutral observational data as permanent documentation of actual life experiences in the lives of 3-year-old children from different socioeconomic backgrounds and (2) to analyze specimen records in order (a) to describe and quantify the kinds of active environmental inputs received by the children, (b) to assess relationships between home experiences and socioeconomic status, (3) to explore the characteristics of the social environment of children in disadvantaged homes, and (d) to relate findings to certain data in the research literature on child-rearing. Narrative descriptions of behavior of 8 low-income urban, 8 low-income rural and 8 middle-income urban children provide the basic observational data recorded as Environmental Force Units (units of behavior of agents acting with respect to the child). Child behavior is then coded and described according to a set of 26 variables. Similarities and differences across groups on some dimensions of the variables are presented. Results of this analysis feature wide individual differences, some important similarities across the three socioeconomic groups, and some interesting intergroup differences in orientation to child-rearing. (NH)

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Environmental Forces in the Home Lives of Three-Year-Old Children in Three Population Subgroups

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For the mothers and children who allowed observers to come into their homes for extended periods of time we have both appreciation and admiration. And, we enjoyed them.

The observers who collected the basic data are listed in Appendix D. Special acknowledgment should be made of the work of Ellen Brown, JoAnn Poole, Bobby Smith, and Melanie Sweeney for continued work on several steps of the undertaking. Mrs. Dottie Ross, who has served as Secretary from early in the development of the project, provided continuity as well as technical skill to the process.

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The assumption that early experience is especially important to the cognitive, social, and personality development of young children is common to the major theories of child development and underlies most intervention programs. The assumption is generally supported by empirical evidence from extensive research with animals (e.g., Harlow, & Harlow, 1966; Scott, 1962; Denenberg, & Bell, 1960) and young children (e.g., Bruner, 1966; Dennis, 1966; Rheingold, 1966). Much of this evidence is reviewed and discussed by J. McV. Hunt (1961).

Despite the widespread agreement on the importance of early experience, however, there is surprisingly little empirical evidence in the research literature which documents the nature of the experiences children actually have in early life. Most of the data on early experience comes from the laboratory, from the clinic, and from parental reports of their child-rearing practices and the behavior of their children. Particularly lacking are data based on direct observations of individual children in the natural situations of everyday life--of the concrete transactions, for example, between a small child and his mother at the dinner table or at bedtime. Such data would appear to have great value for the field of child development quite generally and would seem to be essential to a better understanding of how early experience differs for children growing up in differing life circumstances. In particular, such data are required for assessing the nature of psycho-social deprivation and its impact on normal developmental processes.

Several studies (Sears, Whiting, Nowlis, & Sears, 1953; Sears, Maccoby, & Levin, 1957; Sears, Rau, & Alpert, 1965; Newson, & Newson, 1968; Yarrow, Campbell, & Burton, 1968) have reported data, mainly from parental reports, on several variables of parent and child behavior in early life, including "parental warmth," "handling of aggression" (particularly toward adults), "dependency" and the parental response to this dependency, and certain parental control techniques such as the use of isolation, love withdrawal and punishment. Although studies such as these have contributed in important ways to progress in the field, their value in understanding psychosocial deprivation is limited by their dependence upon parental report, their focus upon populations in the middle-income range, bivariate (as opposed to multivariate) analyses, and inadequate recognition of the influence of the child's behavior on the parent and others in the situation. On the latter two points, Yarrow, Campbell, & Burton (1968) state that the need now is for reformulation of data on child rearing in multivariate rather than bivariate terms and that the child behaviors as well as adult behaviors should be considered as influences upon both participants. Yarrow, Waxler, & Scott (in press) concluded that adult behavior toward the child "is governed not solely by the child's immediate responding, but as well by the images and expectations that the adult develops about the child [p. 22]." They suggest that using both kinds of information in combination is important in studying adult and child effects and the interaction of these effects.

Against this background, it is not surprising that there have been difficulties in identifying specific, universal effects of living conditions

in low-income homes upon child development. In the area of research on disadvantaged populations, as LaVeck states in the preface to a recent HEW monograph (1968):

> There is neither a broadly shared conceptual perspective on the meaning and nature of psychosocial deprivation nor a well-established and comprehensive knowledge concerning its consequences [p. v].

The study of child-rearing practices in low-income compared to middle-income life situations is therefore doubly saddled with theoretical and empirical problems from both domains.

Another obstacle to understanding psychosocial deprivation and its impact on the child is the tendency of research to focus on distal variables of the environment, e.g., race, socioeconomic status, rather than the proximal variables, i.e., specific, concrete behaviors by means of which the distal variables must have their influence.

In the monograph mentioned above, a strong plea is made for the study of proximal rather than distal variables in research on disadvantaged children:

> Thus, race or socioeconomic status or biological defect or population density or educational bureaucracy are environmental descriptions relatively remote from direct psychological or experiential significance. That they have implications for the latter is quite clearly true--that is why they have often been used as relatively effective independent variables. But their implications can only be taken to be probabilistic in nature: to be Negro in the United States, involves a high probability of being exposed to a stigmatizing interpersonal environment. The crucial point is that behavior and development are invariant with the latter, the proximal environment of stigmatizing stimuli, rather than with the former, the distal environment of being a Negro [p. 4].

What is needed in research on deprivation, therefore, is not more studies which search for correlations between distal variables such as race or income level, on the one hand, and abstractions from child behavior such as test scores and parent descriptions, on the other, but rather studies of what mothers, fathers, siblings and others actually say and do to and with respect to particular children in natural, real-life situations and what the child does both spontaneously and responsively over substantial blocks of time. This is a necessary first step in identifying and measuring significant variables of the proximal environment.

Relatively few investigators have attempted to assess the problems of the disadvantaged in terms of the proximal environment. Gray et al., (1966) in their work on the Early Training Project, suggested some possible characteristics of the social environment of the child in disadvantaged circumstances which might be related to the problems these children face on entering the broader culture. They suggested that the reinforcement patterns in the lives of these children might differ from such patterns in more advantaged homes:

> 1. The culturally deprived child generally receives less reinforcement of his behavior.
> 2. The reinforcement of the culturally deprived child is somewhat less adult-administered than that of the middle class child. This happens because the mother is apt to be home less, therefore she is less often available for reinforcement. The mother's physical and emotional energies are so drained into maintaining a subsistence level in the home that she has little energy left over for patterning her child's behavior. All she can do is to try to cope with the behavior of the minute.
> 3. The reinforcement the culturally deprived child receives is not likely to be verbal. The more probable forms of reinforcement he receives are tangible and physical, coming directly from the situation. It is a form of

self-reinforcement which restricts his functioning to a primitive, concrete level. His concept of important objects and behavior remains tied to their use of utility--that is, for him, a horse is to ride, a wagon is to pull, and an apple is to eat. He probably receives a fair amount of nonverbal social reinforcement (pats, hugs, shoves, and the like) from his peers and siblings.

4. The reinforcement of the culturally deprived child is less focused in terms of being directed toward the adequacy or inadequacy of his specific acts. In other words, his reinforcement is apt to consist of a rather vague, generalized approval such as, "That's a good boy," or merely a smile, rather than such specific approving words as, "You tied your shoes just right," or, "You really did a good job helping me with the sweeping." The vague approval does not help the child develop his own standards of performance.

5. Reinforcement is directed more towards inhibiting behavior than it is toward encouraging exploratory activities. Again, this is the picture of the mother's need to cope with the behavior rather than to shape it. In other words, she is more concerned with a child's not being troublesome than she is with his learning more about his world.

6. Reinforcement, when it comes for the culturally deprived child, is likely to be immediate; there is little stress on the child's learning to delay gratification [pp. 7-8].

These differences were identified on the basis of extensive experience with families in poverty and on the research and general literature about the disadvantaged. The need to document such possible differences with systematically collected data based on direct observation of children living in homes of widely differing income levels served as a major inspiration for the present study.

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Purposes

The purposes of the present study have been: (1) to amass a body of theoretically neutral raw data to serve as permanent documentation of the actual life experiences of three-year-olds in three widely differing population subgroups in the late 1960's, (2) to analyze these data so as to describe and quantify the kinds of active environmental inputs which these three-year-old children received, (3) to assess relationships between these experiences (proximal) and the socioeconomic status (distal), (4) to explore with these data the suggestions of Gray et al. (1966) concerning the characteristics of the social environment of children in disadvantaged homes, and (5) to relate the findings to selected data from the child rearing research literature.

Basic Data Collection

Population Sample

Twenty-four children in their fourth year of life constitute the sample for this study. Eight children were from low-income, low education, urban homes (LU); eight were from low-income, low education, rural homes (LR); and eight were from middle-income, high education, urban homes (MU). Both urban groups were composed of an equal number of black and white children; there were no black children in the rural group because no black families lived in the rural area used in this study. Half of each group was male, half female.

Low income families were those in which the estimated family income fell at or below the income level recommended by the Office of Economic Opportunity

(1967) as a cutting point for Head Start Services for families of a given size. In most of the low-income families, both parents had left school below the high school level. The occupations of fathers in the low-income groups were rated as either six or seven on the Hollingshead (1965) scale of occupational status, i.e., these men held jobs at the lowest end of the occupational status hierarchy.

In the middle-income families, the income was well above the average for the nation. Hollingshead ratings for the fathers' occupations here were either one or three, i.e., they held high status positions. All these fathers had completed college, and most had gone beyond even this level. The mothers in all cases had some college experience, and most had completed a college degree.

The children were matched, insofar as possible, across groups for family size and position of the subject child in the family. Both large and small families are represented in all three sub-samples. A summary table showing several characteristics of the sample population is given in Appendix A.

Obtaining Permission from the Family

Subjects were initially contacted in one of two ways: for some, initial contact was through a social worker who was looking for children for the DARCEE preschool; for others, two members of the research staff simply searched in the appropriate areas of town for likely subjects. In all, 28 families were contacted to obtain the 24 families. One of the families was judged to be too affluent for the low-income group. In two families the mother took a job after the initial contact, and observation seemed unwise where the mother was making an initial adjustment to a new situation. The remaining family moved away precipitously after a family disagreement.

All requests for permission were made by M. Schoggen, usually with one other observer present. In this interview with the mother and sometimes the father, the purpose and procedures of the study were described. The wording of the explanation was geared to the apparent understanding of the family. The intent of the explanation was to give the mother an accurate picture of what participation in the study would mean to her and the family. The observational procedure was described in detail, emphasizing the research objective of recording everything the child did and said and everything done or said by others to or with respect to the child. Also covered in the interview were details about the recording apparatus, the identity of the observers, the length and number of visits, and the role of the observer while in the home.

The early part of the interview included no inducement for the family to participate in the study other than the recognition that the research might ultimately benefit children generally. Although we obviously wanted each family contacted to take part in the study, we took pains to make clear that the success of the study did not depend on any one family's willingness to participate; we tried to make the family feel free to refuse our request without guilt feelings.

In cases where none of the children in the family were in a DARCEE preschool, a special fund enabled us to pay ten dollars to the family on completion of the series of observations. All the participating families, however, gave permission before this arrangement was mentioned. The mention of payment was deliberately added as an afterthought partly to reflect our feeling that it was not really possible to "pay for" the help received

and partly because we were interested in getting parents who would agree to participate without money as a motivating influence.

We were able to remain throughout the completion of the series of observations in all households except for the one family which moved. Perhaps some of the success of the observers in this endeavor derived from real feelings of admiration for the families, particularly for the mothers. The observers found it impossible to observe in these low-income situations without coming to a real appreciation of the strength of the mother and of her persistence in the face of what sometimes seemed inundating hardships. Observers were faced with the realization that most of the low-income mothers were performing at a very high level despite their limited educational background, experience, and coping resources.

Sample of Behavior Setting Genotypes

Results of a number of studies have suggested that different concrete situations are likely to elicit different kinds of behaviors (Barker, 1969). Because mealtime typically elicits a high frequency of social interaction, observations were planned for mealtime settings or other settings in which eating took place. This was not always possible, however, because of the irregularity of meals in the low-income families. One difficulty, and perhaps one finding, suggested also by others in the field (Deutsch, 1967), is that some families do not follow a regular schedule of family activities; i.e., there is no mealtime, playtime or bedtime. No systematic attempt was made to identify such regularities in the families under observation, but observers did schedule visits at different times of the day in an effort to find a time when the family might at least have a meal together. In addition, all children were observed in some free-play situations.

The Mother as a Potential Agent

Because of the special importance of the mother, in every case the observer endeavored to wait for situations in which the mother was present at least as a potential agent. However, in one low-income family, the mother regularly sent the children outside early in the day and locked the door. Repeated visits of the observers at different times of the day indicated that this was the customary pattern of the family and therefore the usual experience of the children; the mother simply was not readily available to the children.

Making the Specimen Records

The basic data were gathered in the form of specimen records. The specimen record methodology, devised by Barker and Wright, is described in detail elsewhere (Barker, & Wright, 1951, 1954; Wright, 1967). A specimen record provides a continuous narrative in natural language of the behavior of an individual together with the environmental context of that behavior. In the present study, trained observers recorded verbal notes in the home using a shielded microphone and a small battery powered tape recorder (P. Schoggen, 1964). Later, in the research office, the observer used these notes to dictate a full description of the behavior and context. An excerpt of a specimen record can be found in Appendix B.

As is standard procedure in making specimen records several adaptation visits were made by the observers before regular observations were begun. It was explained to the mother that the observer would pretend to observe during these visits in order to get the child used to her presence. All the mothers seemed to recognize the importance of such visits. These initial adaptation

visits were also used to obtain information needed to describe the house, the furnishings, and the objects available to the children.

Two observers were assigned to each of the 24 families; they alternated visits. The observers attempted to make two observations a week once the adaptation visits were completed. The goal was to obtain a total of eight different observational records. This normally would have completed the series of observations for any one family in six to eight weeks. Several series were completed in six weeks time but in some families it took longer, even as long as six months, to complete the series in one case.

Eleven different observers participated in the data gathering over a period of two years; however, at any one time no more than five observers were available. All observers were female. In all but one situation, black observers were used in low-income black homes; white observers observed in low- and middle-income white homes. In the middle-income black homes observers of both races were used because there were not enough black observers available. Although it would have been desirable to use both black and white observers in the middle-income white homes, the shortage of black observers made this impossible.

A log of visits to the homes was kept by the observers to build a systematic record of the length of time required to complete a series and to provide information about the nature of the visits. A summary of this log can be found in Appendix C.

One hundred ninety-eight specimen records were developed to final form. These records range in length from 10 to 47 minutes, totaling 5,477 minutes of observation. At least eight different observations were completed on

each family except for one which moved away near the end of the series. A catalog of the available specimen records can be found in Appendix D.

Analysis

Unitization Procedure

Specimen records attempt to preserve intact the behavior stream of the child in the natural environment. The major focus of this study has been to examine the impact upon the child of others in the child's environment. Accordingly, a system of unitization based on the behavior of others toward the subject which was devised in an earlier study (P. Schoggen, 1963) was applied to the records in the present investigation.

This system utilizes a basic unit called the Environmental Force Unit (EFU) which is defined as any action by a social agent in the child's environment which (1) occurs vis-a-vis the child, (2) is directed toward an end-state or goal specified or implied for the child, and (3) is recognized as such by the child. The basic property of the EFU is persistence in one psychological direction. So long as an agent continues working toward a single end-state for the child, a single EFU is marked as continuing. Only the observable and successful attempts on the part of agents in the environment to penetrate the child's psychological world are included. Neither inactive aspects of the environment nor environmental actions which are not directed to the child are included. Each unit is titled by identifying the agent first and then stating the goal or end-state of the agent for the child, e.g., "Mother: S (subject) to put shoes and socks on." Units occur singly and in overlapping and complex patterns. Precise criteria for unit identification have been developed and are published elsewhere (P. Schoggen, 1963).

The EFU represents a unit of phenomena at a somewhat more encompassing level than is a single interaction as usually defined. That this level of phenomenon has some ecological validity was pointed out by Barker (1969). In discussing the analysis of specimen records in several ways Barker states, ". . . . a person's behavior is more frequently responsive and conforming to intact EFU than to separate components . . . conformity between the environment and behavior is more frequent over long than over short segments of the behavior stream [p. 153]." This is also related to Gewirtz's (1969) argument that antecedent-consequent relationships are not always continuous. He suggests further that a variety of contextual conditions can determine stimulus efficacy. Both the context and the possible noncontiguous aspects of behavior are taken into account by the Environmental Force Unit analysis.

Each of the specimen records was unitized by two analysts working independently using duplicate copies of the record. These two judgments were reviewed by one of the two analysts who tabulated analyst agreement and reconciled the two judgments. Markings for the units are in the form of encompassing brackets. Appendix B illustrates EFU markings on the left-hand side of the page.

One hundred ninety-two of the 198 specimen records were used to determine the agreement between pairs of unit markers; the remaining six records were used for training. The estimate of accuracy was determined using a formula developed by Barker & Wright (1955) in a similar siuuation. The average estimate of accuracy between all pairs of analysts was 78%, a level which compares favorably with previous studies.

Descriptive Ratings of the Environmental Force Units

Once the identification of the units was completed, the EFU were numbered within the individual specimen records. Each of the 8,899 environmental force units was then coded according to a set of descriptive variables originally devised by P. Schoggen (1963). These variables were modified somewhat for the present purposes by the current research staff as a result of intensive work on initial attempts at coding. Certain other modifications resulted from a series of working conferences with Alfred and Clara Baldwin, John and Beatrice Whiting, and Richard Longabaugh entitled "On Methods in Naturalistic Observation" (see p.

The codings were punched by the coder directly onto especially printed "Porta-Punch" IBM cards as he worked from the unitized specimen record. These codings were then transferred by machine to standard IBM data cards.

Coder Reliability

Twenty percent of all the units were judged by two analysts working independently. Assignments were made so that all coders worked under the impression that any of the records assigned to him might be included in the agreement study. Each coder was paired with every other coder.

Two kinds of computations were made for each pair of coders. One was the commonly used agreement percent, i.e., the percent of the units judged for any given variable on which the two raters agreed. In addition, a Cohen's "k" for nominal data was calculated for each pair of raters for each category. Cohen (1960) presents a method for computing a coefficient of agreement, "k," which is the proportion of agreement after chance agreement is removed from consideration:

> When obtained agreement equals chance agreement, k = 0. Greater than chance agreement leads to positive values of k, less than chance agreement leads to negative values. The upper limit of k is +1.00, occurring when (and only when) there is perfect agreement between the judges [Cohen, 1960, p. 41].

Except when there is perfect agreement, Cohen's "k" always produces a figure lower than the simple percent of agreement.

For some variables it was necessary to combine categories (1) to reduce the number of zero frequency cells and (2) to provide data for which an acceptable level of agreement was achieved. Combinations of categories in general reduced ordinal scales from seven or five points to three. For other variables, nominal categories were grouped in a logically sensible way. When such combinations are used in the results, they will be so indicated.

A complete Coding Manual with detailed instructions for coding EFU on each of the variables was developed and used by the coders.[1] In the section below, each of the variables is described briefly. The median percent agreement and Cohen's "k" across all pairs are given for exact agreement and for combinations of categories where appropriate.

Brief Description of the Variables

The first four variables identified the record, the number of the EFU, the identity of the observer, and the identity of the coder. These were simple clerical tasks which require no elaboration here.

1. This Coding Manual is available from the writers.

Variable 5: Number of Environmental Agents

1. One acting alone
2. Two acting simultaneously
3. Two acting sequentially or alternately
4. Three or more
9. Cannot judge

The EFU title begins with the name of the agent (or agents) involved in the action. Most units involve only a single agent, but this coding enabled us to identify cases of multiple-agent action with respect to the subject. Because the agent had been identified in an earlier phase of the analysis, no agreement data were required here.

Variable 6: Primary Agent Identity

The code number of the agent was punched from a contingency list of agents for each family. In case of multiple agents in an EFU, one was selected as most important in S's view as the source of the EFU. If all (both) agents seemed equally important to S, one was arbitrarily selected as primary agent.

Although there was a separate contingency list for each child, the list for each family was organized so that the two digit number indicated a relationship to the subject which was the same across all families.

00. the mother
01. the father
10-19. older siblings, 10 always identified the next oldest sibling to the bubject and additional siblings were numbered in order, from the subject
26-29. younger siblings, 20 always identified the next youngest sibling, and others were numbered from there
30-39. other children; 39 was reserved for any unidentified child
40-49. children who were relatives; 40-45 was reserved for cousins 46-49 was reserved for other child relatives
50-59. adult relatives
60-69. other adults
- 60. observer on duty
- 61-66. other adults
- 67. observer not on duty
- 69. unidentified adult

70-79. maid or babysitter
80-89. animals
99. unidentified person

Variable 7: Sex of Agent

0. Female
1. Male
9. CNJ

This punch merely provided a convenient way of getting this information directly instead of from the lists of agents.

Variable 8: Identity of Behavior Setting Genotype

1. Free time indoors
2. Mealtime
3. TV watching
4. Free time outdoors
5. Chores
6. Bathroom
7. Home business
9. Cannot judge

Here we recorded the home sub-setting in which the major portion of the EFU occurs. Although the mealtime setting was the main focus of the

observers, several other situations were also observed. These data were used to test whether behavior in one setting differs from that in another.

No agreement data were prepared for these judgments because the coder merely recorded a previously noted decision.

Variable 9: Proximity of the Mother

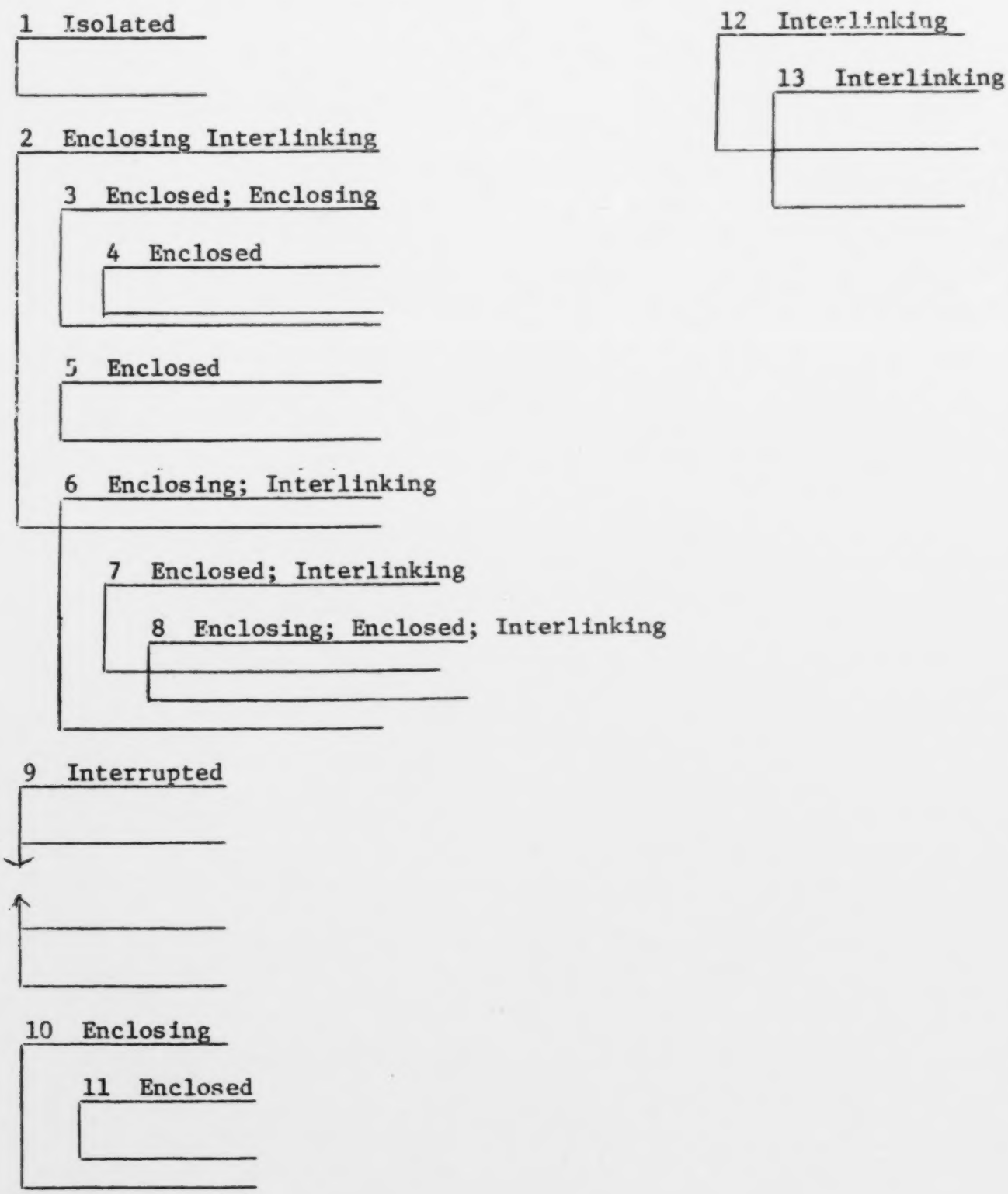
1. M holding S
2. M touching S
3. M & S closely adjacent
4. In communication distance within sight
5. In communication distance out of sight
6. Closing distance required
7. Mother not present
8. Close and distant
9. Cannot judge

Here we recorded the physical proximity of the mother and the subject during the EFU regardless of the identify of the primary agent. Exact agreement was 65%, Cohen's "k" =.46. As the availability of the mother was the chief concern of this variable, categories 1-4 and 5-7 were grouped. Category 8 represented less than 1% of the units. For this grouping agreement percent =96%, Cohen's "k" =.82.

Variable 10: Structure of the EFU

1. Isolated
2. Enclosing
3. Enclosed
4. Interlinking
5. Enclosing; enclosed
6. Enclosing; interlinking
7. Enclosed; interlinking
8. Enclosing; enclosed; interlinking
9. Interrupted

The relationship of each EFU to all others overlapping with it was recorded. Those which stand alone were marked "Isolated." Examples of the structural relationships of EFU are illustrated below.



The occurrence of EFU in complex or simple patterns appeared to be a part of a measure of input to the child. Isolated units with no relationship between them represent a different level of environmental input to the child from a complex interlinking system of units. Because this rating merely recorded a description of line markings, no agreement data was required.

Variable 11: Duration of EFU

1. Fleeting: less than 10 seconds
2. Brief: up to one-half minute
3. About one minute
4. 2-3 minutes
5. 4-6 minutes
6. 7-10 minutes
7. Longer than 10 minutes
9. Cannot judge

Here the length of the EFU was estimated using the observer's recorded time notations and other cues in the record. These judgments were necessarily rough because our time notations lack precision. Yet even these approximations of true duration appear to have value. The duration was estimated according to the actual unit markings, i.e., the beginning to the end of the units was used to determine duration with time not removed for overlapping units.

Duration represents another factor relating to amount and complexity of input.

To achieve more satisfactory rater agreement, the 7-point scale was reduced to four points by combining 2 with 3, 4 with 5, and 6 with 7. Agreement on the original 7-point scale was 76%, Cohen's "k" =.51; for the collapsed scale, agreement was 82%, Cohen's "k" =.62.

Variable 12: Specificity

1. Subject only
2. Subject and one other
3. Subject and informal group of two or more
9. Cannot judge

These ratings recorded how specific the agent was in his main action with regard to S. Specificity was marked from the agent's point of view. Did A concern himself with S only or with S and others?

With regard to the observer, it seemed best to exclude the observer from consideration as an object of concern unless there was explicit evidence that the agent's action was directed to her as well.

Because of the infrequent occurrence of units in Category 3, "Subject and Informal Group," Categories 2 and 3 were combined for data analysis. Agreement for the 3-point original scale was 98%, Cohen's "k" =.87; for the 2-point scale, 99% and Cohen's "k" =.93.

Variable 13: Agent Initiation

1. Spontaneous agent action
2. Instigated by S action Not directed to A
3. Agent responds to prior S action directed to A
9. Cannot judge

Here an attempt was made to record the amount of initiative taken by the agent in the EFU. Every EFU includes directed social action from A to S and from S to A, even if the action is minimal, e.g., ignoring. This variable was used to record which of these occurred first in the EFU. In addition, a distinction was made, when A took the first directed social action, between spontaneous action and action which occurred in response to some aspect of S's behavior. Agreement for this variable as stated with three categories was 83%, Cohen's "k" =.72.

Variable 14: Goal Classes

Every EFU title contained a statement of the goal of the agent for the subject in concrete, behavioral terms. Each goal was then categorized into one of the following Goal Classes.

(S=Subject; A=Agent)
CNJ=Cannot judge

00 S to tell A something
01 S to repeat or clarify
02 S to watch or listen
03 S to do something for A
04 S to follow orders or instructions
05 S to assist or help in joint activity
06 S to restore status quo after S's misdeed
07 S to wait for appropriate time
08 S to let A have something (to give permission)
09 S to stop (period)

10 S to have something
11 S to be played along with
12 S to enjoy what A has provided
13 S to be teased for fun
14 S to let A join activity in progress
15 S to know A feels affectionate (hugging, etc.)
16 S to have A's permission
17 S to have something done

20 S to know A approves
21 S to know A thinks S is funny
22 S to know A understands (S's message is received)
23 S to know how A feels (affect)
24 S to know A sees or hears S doing something
25 S to know something A tells or shows
26 S to know correct fact
27 S to know that S is responsible for trouble
28 S to know S is correct

30 S to mind manners
31 S to play fair, not quarrel
32 S to be careful (personal safety)
33 S to keep self or clothes clean
34 S to conform to mores regarding clothing
35 S to respect property of others (not A's property)
36 S to follow domestic routine
37 S to follow school routine
38 S to follow sanitary procedures (unless it is a domestic routine)

40 S to know A disapproaes or objects
41 S not to waste or damage material things
42 S not to mistreat animals
43 S not to delay activity with digressions
44 S to improve quality of performance
45 S to know S is "stupid"

50 S not to attack other person
51 S not to attack A or A's property
52 S to be ignored; S to cease demands on A

60 S to be scolded, hurt or teased for A's satisfaction
61 S to be told on; gotten into trouble
62 S not to have something
63 S to be hurt (as part of game or activity)

70 S to get out of the way

98 Minimal response
99 Other, unclassified; CNJ

For technical reasons, no agreement data for Goal Classes was provided in the computer programmed agreement analysis. During training, coders achieved an average agreement percent of 71 on exact identification of the 52 goal classes based on 150 units coded by all 10 pairs of coders.

The frequency of occurrence of many of the goal classes was low. In order to provide a managable distribution, the goal classes were combined into logical groups which maintained some of the characteristics of the original 52 dimensions. The combinations from the preceeding list were as follows:

S to tell something included goal classes 00 and 01.

S to do something included classes 02-08.

S to stop doing something included classes 09 and 52.

S to have positive input (not necessarily positive affect) included classes 10-17.

S to know A's position included classes 20-24.

S to know S's position included classes 25-28.

S to conform included classes 30-38.

S to have negative input (not necessarily negative affect) included classes 40-45, 50, 51, 60-63, and 70.

Minimal input included classes 98 and 99.

Variable 15: Designation

1. No designation
2. Negative designation
3. Acknowledge or accept only
4. Specific designation: minimal
5. Specific designation: moderate
6. Specific designation: extensive
7. Reciprocal designation: A asks no more of S than he is willing to give himself
9. Cannot judge

The coder was to judge the extent to which A placed or attempted to place an obligation on S for carrying out some action either immediately or in the future. The basic question was whether A's behavior carried the message for S "to do this" or "not to do that." It was not necessary that S comply with the request or demand; the coder judged here only whether there was such a designation by A and how extensive it was.

The original 7-point variable was collapsed to five points with the three specific designation categories combined into one, specific obligations of any extent. In part this was done because of the low agreement percent for the 7-point scale, 60.5%, Cohen's "k" =.50. For the revised variable, agreement percent rose to 71%, Cohen's "k" =.60.

Variable 16: Congruence

1. Fully congruent
2. Neutral
3. Conflict: A pushes S (includes Fait Accompli)
4. Conflict: A restrains S
5. Conflict: A resists S
9. Cannot judge

Recorded here was the coder's estimate of the extent to which A's goal with respect to S was the same as S's goal for himself. It was a judgment of congruence or harmony between what A wanted for S and what S wanted

for himself. To the extent that S welcomed A's action with respect to him, their goals were judged to be congruent. If, however, there were some resistance by S to what A wanted, this was taken as evidence of some discrepancy between what A wanted for S and what S wanted for himself. Conflict codings were used only when there was evidence of real conflict.

Note that this coding referred only to the degree of congruence between A and S goals for S and not to the intensity of feeling, duration or importance of the EFU. Extreme degrees of congruence can and do appear in EFU of short duration and relatively moderate importance.

Agreement on this dimension was low, 56.5% agreement, Cohen's "k" =.43. Combining the three conflict items provided a 3-point scale of congruence or harmony, neutral, i.e., neither congruence nor conflict, and conflict. For this combination, agreement rose to 63%, Cohen's "k" =.44, still relatively low, but with a "k" above chance level sufficient to warrant using the results with some caution.

Variable 17: Number of Cyclical Exchanges

1. Minimal (1-1.5)
2. High minimal (2-3)
3. Moderate (4-6)
4. High moderate (7-14)
5. High (15-29)
6. Extensive (over 30)

This variable was used to record the amount of exchange of communication between the agent and subject which furthered the goal of the EFU. The number of such communication exchanges was roughly estimated for each EFU by considering the behavior of A and S. In general, one exchange was any

directed action, either verbal, signal, or contact, by A or S to which S or A responds. In every EFU, including "ignoring" units, at least one communication exchange was assumed from the definition of an EFU.

Although agreement was adequate for the 6-point scale, 77.5%, Cohen's "k" =.59, the frequencies at the higher end of the scale were very low. Therefore the variable was collapsed to a 3-point scale, minimal (1), low moderate (2+3) and moderate to high (3+4+5). For this scale agreement was 83%, Cohen's "k" =.67.

Variable 18: Mechanisms used by the Agent

1. Verbal: recognizable speech
2. Signal: gestures, sounds, facial expressions, eye contact
3. Contact: physical contact
4. Verbal + signal
5. Verbal + contact
6. Signal + contact
7. Verbal + signal + contact
9. Cannot judge

This variable was used to characterize the message-carrying mechanisms used by agents. Involuntary actions, or noncommunicating acts were not judged here. The actions of the primary agent only were judged.

For some purposes the findings were used exactly as coded; agreement percent was 74, Cohen's "k" =.65 for exact agreement. Because of the interest in the use of the particular mechanisms whether alone or in combination with others, the categories in this variable were also combined to give a verbal component, a signal component and a contact component. This meant that in combination, the categories were considered more than once, e.g., categories 1 + 4 + 5 + 7 yielded a figure for the verbal component. For this kind of combination the agreement figures were 80%, Cohen's "k" =.70.

Variable 19: Mechanisms Used by the Subject

This variable was judged exactly as was the preceding variable, mechanisms used by the agent. Exact agreement figures for mechanisms used by subject were 77%, Cohen's "k" =.67. Agreement for the combinations described under the agent's mechanism variable was 80.5%, Cohen's "k" =.70.

Variable 20: Outcome

1. Fully successful
2. Mainly successful
3. Partially successful - partially unsuccessful
4. Unsuccessful
5. "Time will tell" (the outcome is really requested for a future time)
9. Cannot judge

The focus here was with the degree of suggess of A's goal for S in the EFU. This judgment was coded in terms of the goal as stated earlier in the goal class coding. The coder tried to estimate the extent to which the goal was accomplished as A intended.

Exact agreement on coding of EFU on all of the categories was low, 55%, Cohen's "k" =.37. However, on combining categories 1 + 2 for "mostly success" and 3 + 4 for "mostly failure"," agreement rose to 82%, Cohen's "k" =.53.

Variable 21: Importance of the EFU to the Agent

1. Minimal
2. Low
3. Low-moderate
4. Moderate
5. Moderate-high
6. High
9. Cannot judge

EFU varied widely in their significance to the agent; this coding was an attempt to assess this significance.

There is an obvious relationship between importance and time. Short fleeting units rarely, if ever, were of maximum importance, but some reached a higher than minimal importance. It is conceivable that a long unit could be judged anywhere in a continuum of importance. The coder was instructed to look for signs that the agent cared about the action in the unit. The more intensively the agent looked at, listened to, laughed with, argued against or responded to the actions of the subject, the more importance the EFU was judged to have for the agent.

A difficult judgment to make, importance codings did not reach an acceptable level for exact category agreement, 46%, Cohen's "k" =.26. With the 6-point scale collapsed to three points, low, moderate and high, agreement rose to 75.5%, Cohen's "k" =.36.

Variable 22: The Importance of the EFU to the Subject

The scale used was the same as Variable 21, with the definition stated in terms of the subject. Agreement for exact judgments was an unacceptable 38%, Cohen's "k" =.19. Collapsing the categories to the low, moderate, high scale as in Variable 21, agreement rose to 62.5%, Cohen's "k" =.31.

Because the level of agreement of the revised variable was still very low, results must be interpreted accordingly.

Variable 23: Affect of the Agent

1. +++ Positive, strong
2. ++ Positive, moderate
3. + Positive, weak
4. Neutral
5. - Negative, weak
6. -- Negative, moderate
7. --- Negative, strong
8 Dramatically changing affect within the EFU
9. Cannot judge

Here the concern was with the feeling, mood, tone, or emotion shown by the agent toward the subject during the unit. What we hoped to assess on this variable was how the agent "felt" in the immediate situation of the EFU. the codings were based on the simultaneous judgment of two dimensions, a positive-negative dimension and an intensity dimension. The positive-negative dimension refers to the pleasure or displeasure, pleasantness-unpleasantness, happiness or unhappiness, shown by the agent during the unit. The intensity dimension refers to the strength of whatever affect was shown even if the qualitative or positive-negative aspect was difficult to ascertain. Agent affect was assumed to be neutral unless the observer provided some fairly explicit evidence that the agent showed some positive or negative feeling in his dealing with S in the EFU.

Exact agreement for Agent Affect was 66%, Cohen's "k" =.41. Because of low frequencies in the extremes, the categories were collapsed to positive affect (1+2+3), neutral (4) and negative affect (5+6+7). Category 8,

"Changing affect," was omitted because only one percent or less of the units for each group received this rating. Agreement for the combined categories was 74.5%, Cohen's "k" =.51.

Variable 24: Affect of the Subject

The scale used for Variable 23, Affect of the Agent, also was used for Variable 24, Affect of the Subject. Exact agreement for subject Affect wss 62.5%, Cohen's "k" =.34; agreement for the collapsed categories was 74.5%, Cohen's "k" =.49.

Variable 25: Investment by the Agent in the EFU

1. Minimum
2. Low
3. Low-moderate
4. Moderate
5. Moderate-high
6. High
9. Cannot judge

The coder judged the time and/or energy that the agent devoted to the EFU including parallel activity that the coder judged necessary to the maintenance of the EFU. Some of the EFU were brief and elicited little involvement of the agent while some were drawn out and totally involved the agent. Others fell between these extremes. There was an obvious, but not one-to-one, relation between extent of involvement and duration. Length alone was not sufficient cause for judging extensive involvement. It was possible to have a long unit of low investment, but a short unit of high investment was not as probable. Coders attempted to make this judgment in terms of total possible investment rather than relative investment of the same agent in different units.

Exact agreement on this variable was very low, 44%, Cohen's "k" =.24. The scale was collapsed to three points, low (1 + 2), moderate (3 + 4), and high (5 + 6). Agreement then rose to 66%, Cohen's "k" =.38, a figure low enough to indicate cautious interpretation of results for this variable.

Variable 26: Investment of the Subject in the EFU

This variable attempted to assess the same information about the subject that Variable 25 did about the agent. The same scale was used. Exact agreement for this variable was 45%, Cohen's "k" =.29. For the collapsed scale, (as in Variable 25) the agreement figures were 68%, Cohen's "k" =.47.

Data Processing

During the academic year 1969-1970 William Wright, Research Assistant for DARCEE, worked under the direction of Dr. James Hogge of the psychology faculty at Peabody devising a computer program, entitled the Ecological Statistics Package (E.S.P.) to aid in the analysis of the data of this study. The system made data organization and retrieval a very efficient process. Although designed especially for this study, the Ecological Statistical Package has sufficient generalizability to make it useful in a variety of contexts.[2]

Although at this point the E.S.P. system has not been linked directly with a statistical analysis program, work continues with this as a goal. The E.S.P. represents a substantial step forward in procedures for handling data such as these but even more extensive uses of computer systems are required to reduce time from data gathering to the production of results.

2. For more information, please contact the writers.

Dr. Hogge wrote three other computer programs for the data analysis (1) to accomplish the study of agreement discussed above, (2) to provide the Kruskal-Wallis one-way analysis of variance as the main instrument for the present analysis, and (3) to provide a program for a Multiple Discriminant Analysis as a way of looking at more than one variable at a time. The last mentioned analysis is still in process and will be incorporated into future reports. Dr. Howard Sandler of DARCEE worked with Dr. Hogge on these three programs, and it was he who called attention to the Cohen's "k," coefficient of agreement.

Results

The Archival Purpose

The goal of creating a library of specimen records which document the home-life experiences of 24 three-year-olds from three different population subgroups was accomplished. Twenty-five copies were made of each of the 198 specimen records. Six copies were used in the present analyses alone.

Research Uses

One entire set of records together with background information was deposited with the Midwest Field Station at the University of Kansas to add to their extensive file of specimen records. These records already have been used by students for pilot work in several studies.

Dr. Reuven Feuerstein of The Youth Aliyah Department of the Jewish Agency, Hadassah Wizo Canada Child Guidance Clinic Research Unit in Jerusalem, Israel requested a set of records "to attempt to categorize the

interactional processes . . . according to the dimensions of the mediated learning experience variable." In a paper to the International Conference on Mental Retardation, Feuerstein (1970) provides a short statement about the mediated learning experience variable. Because Dr. Feuerstein had access to sample specimen records, he was able to evaluate their usefulness for his purposes. A set of records was sent to Dr. Feuerstein which he received in the fall of 1970. He has stated that he will keep us informed of his progress on the analysis.

In addition to this use, several pilot studies using the basic data have been completed and reported. Two of these were done by students at Peabody. Ellen Brown (1969) did a study of Behavior Objects for a sample of the three subgroups; copies of this report were included with the 1969 DARCEE report. Lois Stack wrote a paper entitled "An Exploratory Study of Early Cognitive Development" for a course in psychology in June, 1970. Although not a complete study, the paper provided an interesting example of one use of the specimen records.

Manual for Use in Training Paraprofessionals

Consistent with the goal of providing a body of raw material for a variety of uses, the specimen records were used by Jean Shaw and Maxine Schoggen to prepare a lithographed recource book, entitled Children Learning, which presents from the specimen records examples of mothers teaching and children learning in everyday home situations. This is offered as a useful adjunct to teaching in programs such as pre-primary and primary in-service training or mother-intervention programs.

After a news release about the availability of this book, requests for copies from a wide variety of persons were received. Over 1,000 copies have been distributed to date. Some copies are still available.

Cooperative Efforts Within the National Program

Dr. Howard Rosenfeld of the Kansas component of the National Program spent two days at DARCEE to discuss problems of coding behavior. He provided a video tape of one of his infants to be coded using our method to compare with his method of analysis. This work is still in progress.

Cooperative Efforts Outside of the National Program

Because of our involvement in research in homes, the authors were invited as participants in what turned out to be the first of a series of working conferences "On Methods in Naturalistic Observation." The first one hosted by Drs. Alfred and Clara Baldwin and the Center for Research in Education at Cornell University. In addition to the Baldwins, Drs. John and Beatrice Whiting from Harvard and Dr. Richard Longabaugh from Harvard Medical School joined us for a week-long working conference on methodology. Subsequently, two other shorter meetings, one hosted by DARCEE and one at Cornell with several sources of support, provided stimulating cooperative effort on the enormous problems encountered in trying to capture behavior on-the-spot. Despite different foci on the part of members of this group, the number of shared problems was striking. During the course of the meetings, raw data from each group were distributed, and all of the groups attempted to code data collected by each of the other groups. At a later time, one of our specimen records was chosen for analysis by all groups, the results of which were then compared.

It was clear from this effort that despite differences in basic approaches to data collection and coding, many similarities in the coded results were identified. These groups are now collaborating on the preparation of a publication containing the coding systems of all four groups, the multiple analyses of a specimen record, and the comparative evaluation of the analyses. Publication is planned for sometime in 1971.

A proposal was submitted to the W. T. Grant Foundation for funds to continue this collaborative effort which is focused on the ultimate goal of developing more efficient data collection and processing methods for observational studies in natural situations. Funds for editing the planned publication and for three more meetings of the group were granted. Work will continue in this cooperative effort at least through 1971 and 1972.

The multiple uses of the specimen records document the value of collecting theoretically neutral data. Research on complex processes could be approached by planning the collection of theoretically neutral data for a large sample of subjects, and planning a variety of analyses for the data. Because the problems are so complex, the pooling of resouces can speed progress toward the solution of these problems; pooling data collection certainly would increase the efficiency of the data collection process. Potentially, such a procedure could increase the meaning of the analyses which result by virtue of linkages among otherwise noncomparable procedures.

Results of EFU Analysis

The results of the EFU analysis are presented in three parts. The first section provides a general summary of the data in terms of the behavior of all agents. The second section presents data relevant to the statements by Gray et al. about the home experiences of low- versus middle-income children. Data relevant to selected results from the child rearing research literature are presented in the third section.

General Summary: All Agents

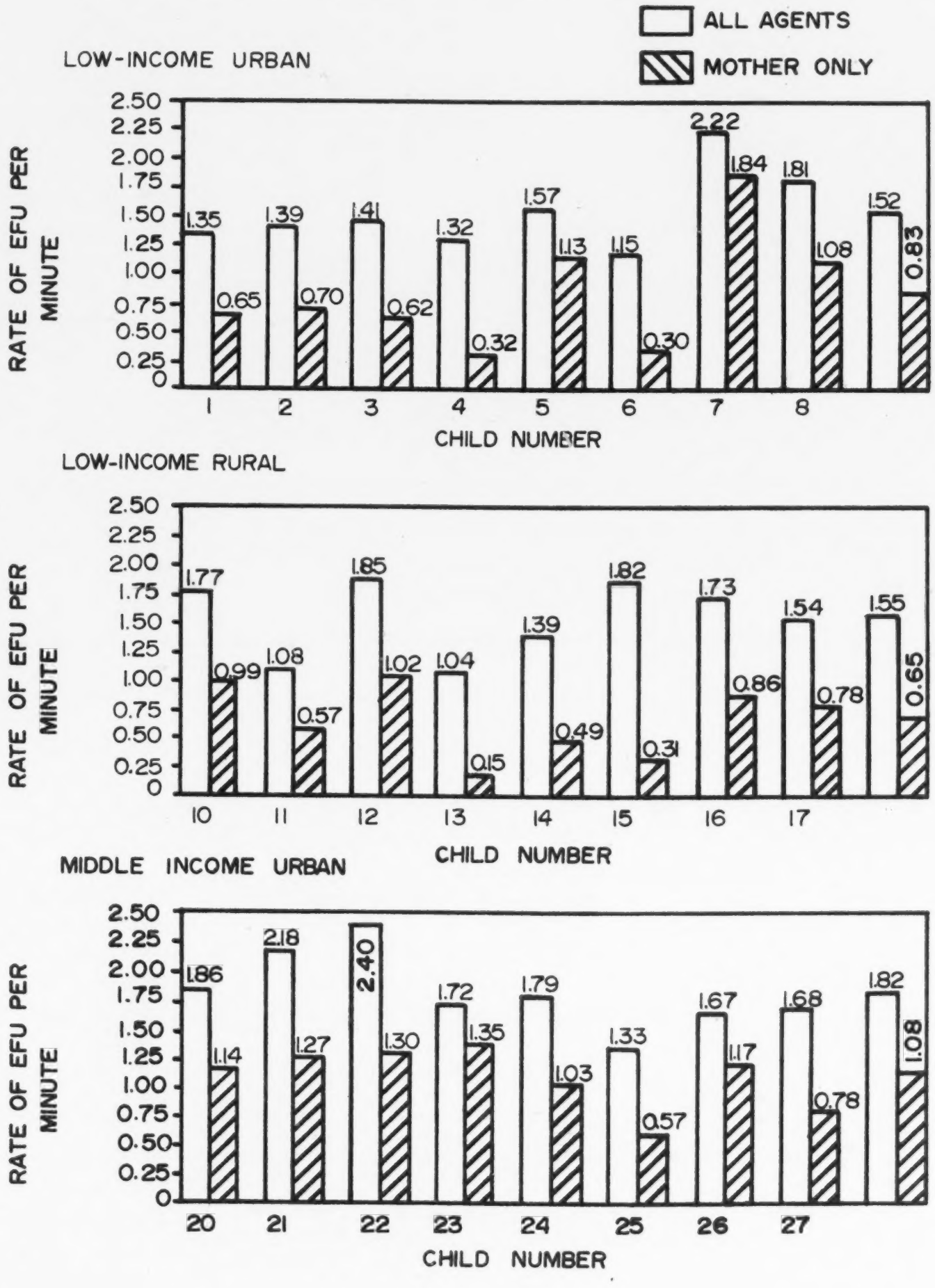
Rate of EFU

The total number of EFU for all 24 children observed was 8,899; 2,796 for the low-income urban (LU) children, 2,702 for the low-income rural (LR) children, and 3,401 for the middle-income urban (MU) children. Of the 5,443 minutes of observed behavior for the 24 children, 1,834 were in LU, 1,745 in LR, and 1,864 in MU. The total number of EFU for each child was divided by the total number of minutes of observation for that child which yielded an average rate of EFU per minute, or rate of flow of EFU from all agents to the particular child.

A similar procedure was followed for the number of units in which the mother was the agent. The frequency of mother-units for a child was divided by the total number of minutes of observation of the child; this figure gave an average rate of flow of EFU from the mother to the child.

Figure 1 presents the total rate of EFU and the rate of EFU with the mother in each of the families in the three groups and the corresponding mean rates for each group.

FIGURE 1 RATE OF EFU WITH ALL AGENTS AND WITH MOTHERS



Individual differences are immediately discernable. For total EFU the two lowest rates were in the low-income rural families, (1.04 and 1.08); the range, however was smallest in this LR group, 0.81. Four rates in the LR group fell above and four below the mean rate for all 24 children (1.63 EFU per minute). The low-income urban group had one of the lowest (1.15) and one of the highest (2.22) individual rates of EFU; here the range was 1.07 with two rates above and four below the total group mean. Two of the middle-income urban individual rates fell below and four above the total group mean for the 24; the highest rate of 2.40, was in this group, and the range was the same as the low-income urban group, 1.07. The mean rates for the three groups were 1.52 (LU), 1.55 (LR), and 1.82 (MU). The Kruskal-Wallis one way analysis of variance (Siegel, 1956) yielded an $\underline{H}$ of 3.04 which does not approach statistical significance, indicating that there was no systematic group variation in rate of input to the children from all agents.

For the rate of mother EFU per minute, again individual differences were striking. Child 13, lowest on total rate of EFU also had the lowest rate of mother EFU. But Child 22 with the highest total EFU rate did not have the highest mother EFU rate; Child 7, with the second highest total EFU rate, showed the highest rate of mother EFU. The range was lowest for the middle-income group (.78); the range for the low-income rural group was .87 and for low-income urban group, 1.54.

The mean rates of EFU per minute from the mother for the three groups were 0.83 (LU), 0.65 (LR), and 1.08 (MU). On the Kruskal-Wallis one way analysis of variance, $\underline{H} = 6.36$, $p = .04$, indicating the rate per minute at which the mothers interacted with their children showed a significant

difference across the groups, i.e., the rate of flow of input from the mothers was significantly higher for the children in the middle-income homes than for the children in low-income homes.

EFU Characteristics

As noted earlier, the observers endeavored to begin and end their observations at points of transition from one activity or event to another in the natural course of events in the home. Obviously, this produced observations of varying total duration for different children which meant that the total number of EFU also varied across children partly as a function of these differences in amount of observation time. Comparisons across children or groups required, therefore, some transformation of the raw frequency of EFU scores to correct for the effects of these differences in observation time. The transformation which is most commonly used in such situations is to change each frequency figure into a percent of all units for a particular child. The resulting percents are directly comparable across children and groups. These percents also provide information about the frequency of occurrence of a particular phenomenon--any one category of a variable--relative to alternative possibilities--all other categories of the variable. Unless differences across children in actual frequencies are quite extreme, the percent transformations are satisfactory for most purposes. The results in this section are presented in this way. In a later section, however, another kind of transformation will be discussed and comparisons of some findings will be made.

The percents of units for each category or combination of categories for each child were rank ordered across all 24 children; the Kruskal-Wallis one

way analysis of variance was then calculated to test the hypothesis that the three subgroups could have been drawn from the same population, based upon the rank order of the subject by percent of EFU.

A summary, by group, of these data on all variables on which the EFU were coded is presented in Table 1. The Kruskal-Wallis H is given; probability figures are given at and below the .10 level so that trends may be seen; however, the .05 level was used as the usual standard for significance. For example, in Table 1, Variable 10, Designation, Category (b), "negative designation," the data indicate that the mean percents for each of the three groups were 24 (LU), 25 (LR), and 13 (MU). The corresponding rank order of each group mean percent within the 24 children of the total sample is 15.6 (LU), 16.0 (LR), and 5.8 (MU). The next column shows the mean percent across all 24 subjects. The two columns on the extreme right show the results of the Kruskal-Wallis computation, H = 10.76, p = .005.

Identity and characteristics of agents. For 14 of the 24 children (4 LU, 4 LR, 6 MU) the mother was the agent in 50% or more of the units. In one low-income urban and three low-income rural families, older siblings were agents in a higher percent of the units than were the mothers. In one low-income urban family, a child who was not a family member was the primary agent in 66% of the units.

In general the agents of the 24 children were predominantly female; only two children, one low-income urban female and one low-income rural male received less than 50% of the EFU from female agents; these percents were 41 and 36 respectively.

Table 1

A Summary of Coded Descriptions of EFU
With All Agents by Groups of Subjects

Variable Category	Low Urban Mean %	Low Urban Rank	Low Rural Mean %	Low Rural Rank	Middle Urban Mean %	Middle Urban Rank	Mean % all Subjects	Kruskal-Wallis H	Kruskal-Wallis p
1. Primary Agent Identity									
(a) Mother	54	12.3	43	9.2	59	15.8	52.6	3.52	
(b) Father	3	14.5	3	9.4	4	13.5	3.2	2.60	
(c) Older sibling	22	11.1	37	15.6	22	10.6	26.7	2.37	
(d) Younger sibling	8	12.7	12	14.5	4	10.2	7.9	1.62	
(e) Other children	1	10.8	-	9.6	4	16.9	2.4	5.36	.067
(f) Other adults	2	14.5	-	10.5	-	12.4	0.8	1.66	
(g) Observer	2	12.8	2	11.9	2	12.7	1.9	0.08	
2. Sex of Agent									
(a) Female	76	12.6	72	11.3	81	13.5	77.0	0.37	
(b) Male	23	12.3	28	13.6	19	11.4	22.9	0.41	
3. Behavior Setting Genotype									
(a) Free	66	13.8	79	16.0	50	7.6	63.8	6.11	.046*
(b) Meal	32	11.6	15	8.0	48	17.7	32.9	7.68	.021*
(c) Other	3	12.6	6	14.4	2	10.4	3.3	1.33	
4. Mother Proximity									
(a) Close	79	14.4	65	8.9	79	14.1	74.6	3.06	
(b) Distant	20	10.5	32	14.8	19	12.0	46.7	1.54	

* Significant at the 5% level.
** Significant at the 1% level.

- = trace

Table 1 (cont.)

Variable Category	Low Urban Mean %	Low Urban Rank	Low Rural Mean %	Low Rural Rank	Middle Urban Mean %	Middle Urban Rank	Mean % all Subjects	Kruskal-Wallis H	Kruskal-Wallis p
5. Structure									
(a) Isolated	52	14.7	53	14.4	42	8.3	48.4	4.23	
(b) Simple overlap	42	10.6	42	10.5	49	16.3	44.0	3.62	
(c) Complex overlap	7	10.0	7	12.7	9	14.7	7.6	1.87	
6. Duration									
(a) Minimum	60	16.0	57	11.7	55	9.6	57.1	3.41	
(b) Brief	37	9.6	40	12.6	41	15.1	39.2	2.50	
(c) Moderate	2	8.3	3	14.7	3	14.3	2.7	4.38	
(d) Long & Maximum	1	11.8	-	10.3	1	15.3	0.7	2.75	
7. Specificity									
(a) S only	90	12.3	88	11.1	90	13.9	89.4	0.61	
(b) S & others	10	12.8	11	14.1	10	10.5	10.5	1.09	
8. Initiation									
(a) A spontaneous	42	11.3	45	12.3	46	13.8	44.3	0.51	
(b) A responding to S act not directed to A	17	13.6	17	13.0	15	10.7	16.1	0.77	
(c) S directs act to A, A responds	40	12.6	38	12.1	39	12.6	38.9	0.03	

Table 1 (cont.)

Variable Category	Low Urban Mean %	Low Urban Mean Rank	Low Rural Mean %	Low Rural Mean Rank	Middle Urban Mean %	Middle Urban Mean Rank	Mean % all Subjects	Kruskal-Wallis H	Kruskal-Wallis p
9. Goal Classes									
(a) S to tell	9	10.1	7	7.9	15	19.4	9.6	12.03	.003**
(b) S to do something	13	14.3	16	17.6	9	5.5	12.4	12.88	.002**
(c) S to stop or cease demands	13	15.3	10	15.4	6	6.7	9.4	8.01	.018**
(d) S to have positive feedback	18	9.8	20	14.1	18	13.5	18.6	1.70	
(e) S to know A's position	7	9.8	7	10.6	9	17.0	7.9	5.10	.076
(f) S to know S's position	16	10.7	14	9.1	21	17.5	17.4	6.38	.040*
(g) S to conform	7	12.1	6	10.0	8	15.3	7.3	2.27	
(h) S to have negative feedback	12	14.2	13	15.7	8	7.5	10.6	6.23	.043*
(i) Minimum & CNJ	5	16.1	4	13.3	3	8.0	3.7	5.67	.057
10. Designation									
(a) No designation	13	12.9	13	11.1	14	13.4	13.5	0.48	
(b) Negative designation	24	15.6	25	16.0	13	5.8	20.3	10.76	.005**
(c) Acknowledge/Accept	23	10.8	20	8.5	28	18.0	23.9	7.89	.019*
(d) Specific designation	34	9.8	36	9.8	42	17.8	37.1	6.81	.032*
(e) Reciprocal designation	3	12.0	4	14.3	3	11.0	2.9	0.99	
11. Congruence									
(a) Fully congruent	30	9.3	30	10.8	37	17.3	32.7	5.79	.054
(b) Neutral	22	12.0	21	10.1	24	15.2	22.3	2.11	
(c) Conflict	45	14.6	47	15.3	38	7.5	42.6	6.08	.046*

Table 1 (cont.)

Variable Category	Low Urban Mean %	Low Urban Mean Rank	Low Rural Mean %	Low Rural Mean Rank	Middle Urban Mean %	Middle Urban Mean Rank	Mean % all Subjects	Kruskal-Wallis H	Kruskal-Wallis p
12. Number of Cyclical Exchanges									
(a) Minimal	60	17.1	57	12.1	53	8.1	56.7	6.61	.036*
(b) Moderate	35	9.1	36	10.5	41	17.8	37.5	7.23	.026*
(c) Maximum	3	8.0	5	15.4	6	14.0	4.8	5.09	.077
13. A Mechanism									
(a) Verbal alone	41	13.6	35	8.6	43	15.1	39.9	3.80	
(b) Signal alone	22	13.8	24	15.3	15	8.3	19.9	4.29	
(c) Contact alone	3	11.7	3	14.0	2	11.7	2.7	0.57	
(d) Combinations	33	8.1	37	13.6	40	15.6	36.6	4.79	.089
(e) Verbal component	71	12.2	67	8.3	80	16.9	73.3	6.00	.048*
(f) Signal component	53	11.1	58	16.0	53	10.3	54.3	3.00	
(g) Contact component	13	9.7	19	16.8	15	10.9	16.4	4.60	.098
14. S Mechanism									
(a) Verbal alone	20	10.3	19	10.2	25	16.9	21.7	4.75	.091
(b) Signal alone	41	15.4	42	15.3	31	6.7	37.4	7.97	.018*
(c) Contact alone	3	15.1	2	14.8	1	7.5	1.8	6.51	.037*
(d) Combinations	34	9.7	36	10.8	43	16.9	38.3	4.85	.086
(e) Verbal component	51	9.9	51	8.9	66	18.6	58.6	9.11	.011*
(f) Signal component	74	13.8	77	14.3	73	9.2	74.6	2.57	
(g) Contact component	12	14.5	12	13.4	9	9.5	10.9	2.19	
15. Outcome									
(a) Mostly successful	69	8.8	71	10.9	75	17.6	72.0	6.85	.032*
(b) Mostly failure	24	14.6	23	14.0	21	8.8	22.6	3.33	
(c) Time will tell	2	11.9	1	13.3	1	12.1	1.5	0.21	

Table 1 (cont.)

Variable Category	Low Urban Mean %	Rank	Low Rural Mean %	Rank	Middle Urban Mean %	Rank	Mean % all Subjects	Kruskal-Wallis H	p
16. A Importance									
(a) Low	13	12.6	15	14.5	11	10.3	12.8	1.38	
(b) Moderate	69	13.0	65	9.0	72	15.3	68.9	3.29	
(c) High	16	10.6	18	15.0	16	11.8	16.4	1.61	
17. S Importance									
(a) Low	20	17.2	16	9.9	18	10.3	18.4	5.51	.062
(b) Moderate	62	10.0	64	13.8	64	13.5	63.4	1.45	
(c) High	15	10.6	17	13.3	17	13.5	16.5	0.85	
18. A Affect									
(a) Positive	23	10.6	23	10.0	30	16.8	25.7	4.66	.095
(b) Neutral	56	11.8	53	10.2	59	15.3	56.4	2.21	
(c) Negative	18	14.5	22	16.5	10	6.3	16.1	9.35	.009**
19. S Affect									
(a) Positive	22	10.5	24	13.3	26	13.5	24.5	0.91	
(b) Neutral	60	14.2	59	10.9	60	12.3	59.4	0.89	
(c) Negative	16	14.3	12	10.5	12	12.5	13.4	1.18	

Table 1 (cont.)

Variable Category	Low Urban Mean %	Low Urban Mean Rank	Low Rural Mean %	Low Rural Mean Rank	Middle Urban Mean %	Middle Urban Mean Rank	Mean % all Subjects	Kruskal-Wallis H	Kruskal-Wallis p
20. A Investment									
(a) Low	32	14.5	34	13.3	29	9.6	31.6	2.11	
(b) Moderate	56	10.5	53	10.5	59	16.5	56.4	3.88	
(c) High	9	10.2	12	13.8	12	13.4	10.9	1.24	
21. S Investment									
(a) Low	42	14.0	41	12.4	37	11.0	40.1	0.75	
(b) Moderate	48	11.4	46	12.4	49	13.6	61.9	0.39	
(c) High	9	11.5	11	12.1	13	13.8	10.9	0.49	

Specificity and Agent Initiation. On Variable 7, Specificity, Category (a), agents directed behavior to the subject alone in 89.4% of the units; the range as from 77% to 97% with both extremes occurring in the middle-income families. This pattern was similar across the three groups.

Also similar were the data on Variable 8, Initiation. Agents were responsive to and spontaneous with the subjects, in similar percents of the units in each of the three groups, i.e., no intergroup differences were apparent.

Goal Classes. In the variables relating to goal classes, five of the nine goal classes showed significant differences across the groups on the low- versus middle-income dimension. The agents in the eight middle-income families had goals for "S to tell" and for "S to know S's position" in a higher percent of the units than did the agents in low-income homes. The agents in the 16 low-income families had goals for "S to do something," "S to stop or cease demands," "S to have negative input" in higher percents of the units than did agents in the eight middle-income families.

Unexpected similarities across groups occurred on two goal classes, "S to have positive feedback" and "S to conform." It is of interest to note that although "S to have negative feedback" did show a significant difference across groups (higher percent in low-income groups) the converse, "S to have positive input," did not.

Mechanisms. Table 1, Variables 13 and 14, provides data about use of mechanisms by the agent and the subject, respectively. Because of the emphasis in the research literature on the use of verbal skills in middle- versus

low-income homes (Cazden, 1967; Hess et al., 1968; Kogan, 1966), results on this variable in the present study were of special interest.

Although the use by the agent of verbal mechanisms alone appeared similar across groups, the use of verbal mechanisms singly plus combinations with a verbal component showed an interesting pattern with LR < LU < MU, which yielded a Kruskal-Wallis $\underline{H}$ of 6.00, $p = .048$. None of the other mechanisms used by the agent singly or in combination showed a significant trend. For the 24 families, then, agents in the middle-income families used verbal mechanisms more frequently than did agents in the low-income groups, but there appeared to be some difference between the two low-income groups. All children were receiving some verbal input in 67% or higher of the units for each group.

A markedly different picture emerged when mechanisms used by the subject were considered. Children in the 16 low-income families used "signal" and "contact" mechanisms alone in significantly higher percents of their units than did the middle-income children. Middle-income children used a verbal component in a significantly higher percent of the units than did the low-income children. All children were producing verbal behavior in over half of the units.

Extent of participation. Several of the variables on which EFU were coded have to do with the extent and quality of participation between the two parties, agent and subject. Designation indicated the extensiveness and quality of the obligation placed upon the subject by the agent. Cyclical Exchange was an estimate of the amount of interchange between the two parties. Importance and Investment were attempts to evaluate the importance of the unit to the agent and to the subject and the extent to which each invested himself in the unit.

In Designation, Category (a), "no designation" showed no difference across groups. Roughly 13% of all units for all subjects were units in which the agent simply responded to an action by the subject with no further requirement for the subject implied or specified. The range was from 5% to 22%.

"Negative designation" was used when the main thrust of the unit was for the child to stop doing something, either as a restriction on something already underway or as a preventative action. Here there was a dramatic difference; EFU agents in the low-income groups showed higher percents of their EFU in the "negative designation" category as compared to agents in the middle-income group (K-W $H = 10.76$, $p = .005$).

For units in which the agent asks the subject only to "acknowledge or accept" some behavior of the agent, a middle- versus low-income difference (middle > low) was clearly established. In these units, at least the attention of the child was required. This suggests that one strategy used by the middle-income agents as an alternative to a "negative designation" was to require the attention of the child.

The occurrence of "specific" designation, i.e., units in which the agent placed a specific behavior requirement upon S, also showed a difference across groups. The children in the middle-income families were experiencing specific behavioral requests in a greater percent of the EFU than the children in the low-income families.

"Reciprocal" designation was designed to tap those units in which the agent asked no more of the subject than he gave of himself. There was no difference on this category across these groups and the frequencies were low.

The lowest percent was in a low-income rural family in which the agent in most of the units was the next older sibling.

In the variable, Number of Cyclical Exchanges, "minimal" cyclical exchanges represented a significantly smaller percent of the units in middle-income than in low-income families and the highest percent occurred in the low-income urban families. "Moderate" cyclical exchange showed the reverse pattern. There were very few units with a coding of "maximum" for any child.

The greater percent of "moderate" cyclical exchanges for middle-income children suggests that it might be worthwhile to examine events within EFU. Such an effort is in process.

Importance and Investment. Data regarding the importance of the EFU to both the subject and the agent are shown in Table 1, Variables 16 and 17. For agents, no group differences were seen. Apathy, described so frequently as characteristic of persons in low-income situations, was not apparent relative to other categories of EFU importance in these 16 low-income families. On this variable, the percents for the two urban groups were more similar than the percents for the two low-income groups.

On importance of EFU to the subject (Variabe 17), the category "low importance" showed a difference between the low-income urban families versus the low-income rural and middle-income urban families. Additional data are needed to understand this difference. The rating for the rural group may be related to the fact that there were several families in the rural area in which the three-year-old children were observed helping with real work, such as picking tomatoes, sorting potatoes, and bringing wood to the house, which increased the percent of units coded "moderate" or "high" on importance.

Variables (20 and 21), A Investment and S Investment showed marked similarity for both agent and subject across the three groups. Because the coder agreement on these variables was low, it is difficult to evaluate this result.

Congruence and Outcome. Congruence and Outcome are two variables which relate to the content of EFU in still another way. Congruence essentially indicates whether there is harmony, neutrality or conflict between the agent's goal for the subject and the subject's goal for himself.

Table 1, Variable 11, provides a summary of the data on Congruence by group. "Conflict" occurred in a higher percent of units of both low-income samples than in the middle-income sample and "full congruence" occurred in a higher percent of the units in middle-income group than in either low-income group. Almost half of the units for both low-income groups were units coded as "conflict" but only a little more than one-third of the units in the middle-income sample involved conflict. For the middle-income children, conflict and nonconflict were about equally represented in the units (38% and 37% respectively). In the low-income groups, however, conflict was a characteristic of units in a higher percent of the units (45% and 47%) than nonconflict (30% and 30%) for low-income urban and low-income rural, respectively.

The data on the Outcome of the units, i.e., whether the agent reached the goal of the EFU, are presented in Table 1, Variable 15. Here it is of interest to note that although the agents in middle-income families were successful in a larger percent of units than agents in the low-income families, the agents in the low-income families did not show a higher percent of units in which failure was judged to be most salient. All agents experienced

failure in from 14% to 32% of the units. Success was the more frequent experience of agents generally speaking; between 61% and 85% of the units for all 24 children were judged to be successful.

Agents of children receiving a high percent of conflict also tended to have a high percent of failure ($p = < .001$, Sign Test) but whether conflict within the unit was related to failure within the unit directly is unanswered at this writing.

Affect of A and S. The Affect or the feeling the agent and the subject showed toward each other was judged for each unit. Table, 1, Variables 18 and 19, presents the summary of the results for both subject and agent affect as "positive," "neutral," or "negative."

For all 24 children, about half of the units from all agents were classified as "neutral." There were individual differences; the overall range for "neutral" affect was from 44% to 69%. Here again there appears little substantiation for a picture of excessive apathy of agents in low-income families; neutrality was a common expression by all agents across all three groups.

"Positive" affect of the agent was coded for a slightly higher percent of the units in the middle-income families than in the low-income families but the difference did not reach a significant level. Twenty-three percent of the units in both low-income groups were coded as showing "positive" affect of the agent; 30% of the units in the middle-income families were so rated. The range was from 13% to 38%; the lowest percent occurred in a low-income rural family, the highest, in a middle-income urban family.

For the two low-income groups "positive" affect on the part of the agent was judged to occur in a slightly higher percent of the units than "negative" affect; in the middle-income group the "positive" affect outweighed the "negative" affect units three to one. Units were judged "negative" affect by the agent in a significantly higher percent of both low-income groups than in the middle-income group.

Subject Affect, Variable 19, showed a striking pattern of homogeneity. Despite the fact that the children in the low-income group received from agents almost as high a percent of "negative" affect as "positive" affect, they gave more "positive" than "negative" affect in return. The range for "positive" affect was from 12% to 35%; both extremes occurred in the middle-income group.

The ratings of "negative" affect on the part of the subject ranged from 7% to 24% for the 24 children with a mean percent of 13.4 for all 24 children.

On the average about 59.4% of the units across all 24 children were rated as showing "neutral" affect on the part of the subject. This figure may result in part from some difficulty in interpreting behavioral cues given by three-year-old children. These data suggest, however, that coders appeared to have no more difficulty making this judgment in one group of families than in another.

Frequencies Adjusted for Time Differences

As noted above, the results in the preceding section were presented as percent transformations of the actual raw frequencies because of differences between children in total duration of the observations. Another method of correcting the raw frequencies for such time differences is to apply to each frequency a correction factor which corresponds to the appropriate difference in total duration of the observations. A correction factor is obtained for each child by dividing the smallest total number of minutes observed, i.e., for Child 13, 165 min., by the number of minutes of observation for each child. This correction factor is obviously 1.0 for Child 13 and something less than 1.0 for each of the other children. This factor for each child multiplied times the frequency data for that child yields frequencies adjusted for the difference in actual observed time. The resulting frequencies are referred to below as frequencies adjusted for differences in duration of observation or merely "adjusted frequencies." Like percents, these adjusted frequencies are directly comparable across children. They are equivalent to results reported in terms of rate or frequency per unit of time.

In most instances, the results of these two transformations of the frequency data are similar. In some cases, however, the different transformations produce results that differ markedly. Table 2, for example, compares data on Congruence in terms of adjusted frequencies and percents. Fully congruent units, it may be recalled, are those units in which there was predominantly harmony between the agent's goal for the subject and the subject's goal for himself in the EFU. The data reported in Table 2 as

adjusted frequencies (group means) indicate that the middle-income children were experiencing more units (109) in which such harmony existed than were the low-income children (76 and 77). The percent transformations also indicate that the same raw frequencies represented a higher percent of the total number of units (groups means) for the children in the middle-income homes than the percent of units so rated for children in the low-income homes. The two transformations, therefore, tell essentially the same story.

Table 2

Comparison of Adjusted Frequencies and Percent Data on Congruence

		Low Urban		Low Rural		Middle Urban		Kruskal-Wallis	
		Mean Score	Rank	Mean Score	Rank	Mean Score	Rank	H	p
Fully Congruent	f	76	9.4	77	10.8	109	17.4	5.84	.055
	%	3o	9.3	30	10.8	37	17.3	5.79	.054
Neutral	f	54	10.3	52	10.3	72	19.0	16.38	.001
	%	22	12.0	21	10.1	24	15.2	2.11	
Conflict	f	113	12.2	118	13.6	113	11.8	0.29	
	%	45	14.6	47	15.3	38	7.5	6.08	.046

The "neutral" coding was used for units in which there was neither specific evidence of harmony nor specific evidence of conflict. Here the adjusted frequency data indicate that the middle-income children received a significantly higher mean frequency (72) of "neutral" units than did the low-income children (54 and 52). However, these frequencies produce percents which are similar across groups. Conversely, in the bottom two lines of Table 2, the data on the occurrence of conflict in the EFU in terms of

adjusted frequencies show no intergroup differences but the same raw frequencies expressed as percents of all units yielded statistically significant intergroup differences, the low-income children having higher percents than children in middle-income homes.

It is clear, therefore, that the conclusions reached about a set of data may differ markedly depending upon which of the two transformations is used. This documents an important methodological point: although often equivalent, adjusted frequency data and percent data really have different bases and therefore are useful for answering different kinds of questions. Table 2, for example, tells us that although low-income children experience conflict in EFU no more frequently than do middle-income children, i.e., group mean adjusted frequencies of 113-118, this amount of conflict constitutes a significantly higher percent of their EFU than it does for the middle-income children, owing principally to the somewhat (but not significantly) lower rate of EFU per minute for the low-income children.

Yarrow et al. (1968) identifies one problem of relating interview data to observational data in this way: ". . . there is little comfort for assuming that ratings labeled the same in a parental interview and in direct observations are calibrating the same aspects of behavior [p. 119]." The comparison above makes it clear that there is even less comfort in knowing that the same frequency of one kind of observed behavior expressed in one form supports a conclusion different from the conclusion supported by placing the same frequency in a different context. Had we, in this study, looked for and counted conflict units only, our results on conflict for the low-income and middle-income groups would have indicated that there appeared to

be no difference in the frequency of conflict because we would have obtained no indication of how frequently other forms of congruence had occurred. However, when the frequency data are placed in the broader context, i.e., relative to the occurrence of other forms of congruence, the experience of conflict for middle- versus low-income children presents the picture described above, i.e., children in the low-income homes experienced a higher percent of their units as conflict units than the children in the middle-income homes.

No data are currently available as to which kind of figure best represents the effective experience to the child. And, indeed, neither may represent this experience as well as some other form of analysis. For a more complete methodological study of this question, both kinds of computations should be carried out with comparisons and assessment of the meaning of the data. We hope to do this in a later report. Both kinds of data will be used in some of the following sections.

Evidence Relevant to Statements in the Gray, Klaus, Miller, & Forrester Paper

Five of the six statements by Gray et al. (1966) expressed ideas which, although stated in terms of reinforcement, could be interpreted in a framework of goal-directed behavior. The results of the present study of 24 children provided a way of looking at these ideas with empirical data. Because the original statements refer to amount of behavior, the data will be expressed primarily in terms of frequencies adjusted for differences in observation time. Where frequency and percent scores suggest different conclusions, both transformations will be given. In some instances data referring to the mother as the agent will be presented instead of, or in addition to, information regarding all agents.

1. "The culturally deprived child generally receives less reinforcement of his behavior."

In terms of the present study, this statement can be interpreted to mean less input from the environment relative to the child's behavior. Measures of amount of input included rate of EFU, duration of EFU, patterns of the structure of EFU, and the number of cyclical exchanges. Rate of EFU and complexity of structure presented similar pictures across the three groups; the rate of EFU per minute showed individual variation but no systematic group variation. EFU occurred in neither more simple nor more complex patterns in one group than another. Although there did appear to be more units of moderate duration in the middle-income families, the frequency was low across all groups and the percents of the total units for each group showed no differences.

The variable, Number of Cyclical Exchanges may yield information more closely related to a unit of "reinforcement" because one cyclical exchange refers to one A to S or S to A cycle. The group rank order of adjusted frequencies on cyclical exchanges showed frequencies of a minimal number of cyclical exchanges which appeared similar across the three groups. The percent transformation indicated that the children in the low-income urban families received a higher percent of units coded "minimal" than the low-income rural families; the lowest percent of "minimal" occurred in the middle-income families ($H = 6.61$, $p = .036$). On "moderate" cyclical exchanges the adjusted frequency transformations indicated a nonsignificant trend toward more units coded as moderate for the middle-income children than for either of the two low-income groups. However the low-income urban and rural children received about the same percent of units so coded, and the children in the middle-income families received a significantly higher percent of units coded as "moderate" ($H = 7.23$, $p = .026$).

There is, in general therefore, little support in these data for the suggestion that the 16 children in the low-income families were receiving less input from their environment than were the eight middle-income children, but within the EFU a higher percent of the units of middle-income children compared to low-income children involved more cyclical exchanges with the agent.

2. "The reinforcement of the culturally deprived child is somewhat less adult-administered than that of the middle-class child. This happens because the mother is apt to be home less, therefore she is less often available for reinforcement."

Although it was possible to identify all adults, including fathers, who were EFU agents to the children, only 5% or less of the units were units in which some adult other than the mother was the agent.

Because times were chosen for observation when the mother was physically present,,no data are available from this study regarding the number of hours per week the mother was actually available to her child. However, there is direct information regarding the availability of the mother during the observation periods. When she was physically present in the home, the mother's proximity to the child was judged for each of the 8,899 units. The mother was as available to the children in one group as in another in terms of both frequency and percent of units in which the mother was "in communication distance; in sight," or closer.

Despite the fact that the mother was as close to the subject in one group as in another and that she was the agent in a similar percent of units across groups, the adjusted frequency data showed that the children in the middle-income families received far more ($f = 177$, rank = 17.0) units from the mother than either children from the low-income urban ($f = 137$, rank = 11.0) or low-income rural ($f = 107$, rank = 10.0), $\underline{H} = 8.40$, $p = .016$. The duration of the units complexity of the structure of the units and number of cyclical exchanges were similar across the groups for the units in which the mother was the agent.

The mother then, <u>was</u> a more frequent agent in the middle-income homes than in the low-income homes, but this frequency represented a similar percent of the input to the children across groups, and the units with the mother were no more complex or longer in duration in one group than another.

3. "The reinforcement the culturally deprived child receives is not likely to be verbal. The more probable forms of reinforcement he receives are tangible and physical coming directly from the situation . . . He probably receives a fair amount of nonverbal social reinforcement (pats, hugs, shoves and the like) from his peers and siblings."

The children in all three groups received a substantial amount of verbal input. In fact, on the average, 73.3% of the units for all children were implemented via verbal mechanisms singly or in conjunction with other mechanisms. However, the children from the middle-income homes as compared with the children from the low-income homes received a greater number ($\underline{H}$ = 6.34, p = .028) and a higher percent ($\underline{H}$ = 6.00, p = .048) of units in which there was a verbal component. The children in the low-income urban homes received a similar number but a higher percent of units in which the agent used a verbal component than did the low-income rural children.

When the data from mothers only were considered, mothers were judged to use verbal inputs in a significantly larger number of units in the middle-income homes as compared to the low-income homes ($\underline{H}$ = 7.60, p = .024), but these frequencies represented a similar percent of the units across the groups.

It might be noted here that intergroup differences in the output of the child in terms of verbal mechanisms were even clearer. Children in the middle-income families used a verbal component more frequently and in a higher percent of units than did the children in the low-income families [$\underline{H}$ = 8.14, p = .014 (f); $\underline{H}$ = 9.11, p = .011 (%)].

4. "The reinforcement of the culturally deprived child is less focused in terms of being directed toward the adequacy or inadequacy of his specific acts."

In the Designation variable, the "specific designation" category was used to tap instances in which a specific behavior obligation had been placed on the subject by the agent. This appeared to be at least indirectly related to the above statement. In addition the Goal Classes listed under "S to know S's position" related directly to giving the child feedback about his own behavior.

In the adjusted frequency data, children from low-income urban homes received fewest units coded "specific designation" (rank 5.1). The children in the low-income rural homes received many more units so coded (rank 13.3) while the children in the middle-income homes received almost as many units coded this was as the two low-income groups put together (rank 19.1), $\underline{H} = 15.80$, $p = .0001$. These frequencies represented similar percents for the two low-income groups (rank 9.8, 9.8) with the middle-income group showing a much higher percent (rank 17.8; $\underline{H} = 6.81$, $p = .032$) of units coded as carrying a specific behavior obligation.

The data on "S to know S's position" suggest that the agents in the middle-income families gave the child feedback about his own behavior more frequently ($\underline{H} = 6.15$, $p = .047$) and in a higher percent of the units ($\underline{H} = 6.38$, $p = .040$) than did the agents in the low-income homes.

Mothers as agents, provided specific designation in more units ($\underline{H} = 7.31$, $p = .028$) in the middle-income families than in the low-income families but these frequencies represented similar percents of the total

units for each group. Mothers gave the child feedback about his own position in a higher frequency and in a higher percent of units in the middle-income families than the low-income families [$\underline{H}$ = 8.76, p = .041 (f); $\underline{H}$ = 7.10, p = .028 (%)].

In general, from all agents and from mothers only, children in the middle-income homes received higher frequencies and percents of units coded in such a way as to indicate that the input was directed toward specific acts of the child.

5. "Reinforcement is directed more towards inhibiting behavior than it is toward encouraging exploratory activities" for the low-income child as compared to the middle-income child. Here again the mother was mentioned as the main source of this behavior. Four categories of variables were seen as relevant to the inhibition of behavior. Two were seen as related to encouraging exploratory behavior which was less easily available from these data in part because encouraging exploratory behavior appeared more often as a method or strategy toward a goal which would be expressed in some other way, whereas the inhibition of behavior was more often expressed directly.

"Negative" Designation, Goal Classes "S to stop or cease demands," "S to have negative feedback" and the coding of "restrains or resists" in Congruence were seen as characteristics relating to the inhibition of behavior. In general for these four categories, there were nonsignificant trends in the direction of more frequent coding of units showing inhibiting characteristics but that the percent of the total units for each group indicated a significantly higher percent of units coded on all these dimensions for the children in the low-income families than in the middle-income families. The data

involving only mothers as agents indicated similar results, i.e., the adjusted frequencies of occurrence indicated weak trends in the expected direction but the percent of the total units for each group coded on all of the inhibiting characteristics indicated a significantly higher percent of such characteristics occurring in the low-income families.

To attempt to assess the support of exploratory activities, the categories "positive feedback to S" and "fully congruent" were used. Data involving all agents indicated that positive feedback to the subject was given at about the same frequency and in similar percents of the units across groups. Mother-units followed the same pattern.

Fully congruent units occurred more frequently and in a higher percent of the units for middle-income children than for low-income children [$\underline{H} = 5.84$, $p = .05$ (f); $\underline{H} = 5.79$, $p = .05$ (%)].

In general, therefore a significantly higher percent of the units for these children in the low-income groups compared to the middle-income group were characterized by inhibiting forces even though the adjusted frequencies of these units indicated only a trend. The evidence regarding the agent's support of the child's exploratory behavior was weaker and the measures were indirect. Analysis of strategies, now in progress, should provide data more directly related to this kind of experience.

In summary, for these children there appeared to be no greater amount of input from agents in one group than in another. However the qualitative characteristics of the input seemed to follow closely along the lines suggested by Gray et al. Mothers were agents in fewer units in low-income than in middle-income homes. All agents in the low-income homes used verbal

mechanisms less frequently and in smaller percents of units than did agents in middle-income homes. The behavior of agents in the low-income homes as compared to the behavior of agents in the middle-income homes appeared to be less focused on the specific acts of the child and more often directed toward inhibiting the child's behavior.

Ethnic Group Comparison

The two urban groups were constituted so that black and white families were equally represented. No comparisons of these two groups were originally planned but because interest in ethnic comparison has been high and because relatively few investigators have had the opportunity to have as subjects both black and white, middle- and low-income families, it seemed valuable to use the present data to make such a comparison. Data from the 16 low- and middle-income families in the urban area were pooled for each of the two ethnic groups and the Mann-Whitney U test was used to test the hypothesis that these families could have come from the same population.

The 16 families were matched on the same dimensions used in matching the families across socioeconomic status, i.e., family size, ordinal position of the child, occupation of the father, type of residence, educational level of the parents and income level.

All of the categories within variables for which socioeconomic group differences were found were tested, e.g., Goal Classes, "S to tell something," "S to stop or cease demands," "S to know S's position"; Agent Mechanism, "verbal component"; Subject Mechanism, "verbal component"; Designation, "negative"; and Cyclical Exchange, "moderate." In addition measures of amount of input were tested, e.g., rate of EFU, Structure, Duration and

Cyclical Exchange. Categories in 16 other variables were also tested as an additional check.

There was no support for rejecting the hypothesis that the two groups were drawn from the same population. Mean scores were similar across groups and there were not even weak trends toward differences between the two groups.

Differences between white and black subjects in behavior and in social-environmental factors have been emphasized in many studies. The data in this study were based upon many judgments about specific behavior occurrences in concrete situations. These methods were sensitive to differences between groups, as the data on the three socioeconomic groups clearly demonstrate, yet no ethnic group differences were found. This documents the importance of designing research so as to keep separate the influence of socioeconomic factors on the one hand and ethnic group factors on the other.

Relationship to Child Rearing Research

"Child rearing is not a technical term with precise significance. It refers generally to all the interactions between parents and their children [Sears, Maccoby, & Levin, 1957, p. 457]." Whether or not teaching is intentional in these interactions, there are lasting effects upon the child suggest these authors. However, the relationships of the outside-the-child occurrences (the child's environment) to child development have not been well established. This problem is recognized by Yarrow, Campbell, and Burton (1968):

> This assumption of early effects is common to most of the theories on development. The harder task, however, has been to go beyond the assumption or general indication that influences are present, to the exact identification and measurement of the variables that are necessary and sufficient to produce specific effects [pp. 2-3].

As early as 1949 (Orlansky), the argument was made that it is futile to search for relationships between specific practices of early child care and characteristics of child personality and behavior. Almost 20 years later this same view was expressed by English investigators, John and Elizabeth Newson (1968):

> . . . no one seriously doubts that the way in which parents behave toward their children has some effect upon the kind of people their children become; why then is it so difficult to pinpoint cause and effect? The answer is, we suggest, that specific practices in child care--breast versus bottle-feeding, early versus late toilet training, and so on--are a good deal less important in the long term than the spirit in which they are carried out. Parental attitudes and values--their whole philosophy of child-rearing--must have a pervasive and profound effect upon the developing child: indeed, parents themselves intend this to be so; and if research results fail to demonstrate such an effect, we can only conclude that the research methods were inappropriate [p. 18].

A great deal of research has been done concerning the mother or caretaker as a major source of effects on the child. Even though the approaches have stemmed from diverse theoretical biases, some common interests have evolved. Weaning, toilet training, reward and punishment, warmth or hostility of parent behavior, the manner of handling aggression and dependency and the use of certain control techniques have received attention from a variety of sources. Replication of studies has been rare, due in part to the difficulty in defining these dimensions. Rarely, if ever, have studies

attempted to place into a total context of behavior the frequency of the specific behaviors studied.

The use of Environmental Force Units constitutes one way to approach the task of measuring the social input and some of the direct effects of that input. It will be the purpose of this section to examine several of the commonly studied dimensions, specifically, warmth-hostility of the parents, dependency, and parental handling of aggression to parents, using the current EFU data to indicate the place these behaviors hold in the total context of all behavior occurring during the observational periods. In addition, two studies on disturbances experienced by three-year-old children by Philip Jackson and Bernice Wolfson (1968, 1969) will be discussed in the light of information from the sample of three-year-olds reported in this study.

Warmth-Hostility of the Mother

The data from the study by Sears et al (1957) regarding the warmth-hostility dimension were presented as percents of families rated at one of the three points on their scale, i.e., warm, moderately warm and cold. These ratings were based on responses of the mother to questions in the interview about how she "got along with" her child. Median percents computed from their published data indicate that 37% of the families were rated as warm, 39% were rated moderately warm and 25% were rated as cold. Of necessity, such a global rating obscures the day to day variations on this dimension within any one family.

In the present study the coding of observed behavior which seemed to relate most directly to the warmth versus hostility dimension (or set of dimensions) were those on Agent Affect and Congruence between the goals of the agent and subject. Affect (feeling plus intensity) of the mother was coded "neutral" in an overall average of 57% of the units (LU = 56%; LR = 51%; MU = 59%). For more than half the units, then, the children were receiving neutral i.e., neither warm nor hostile, affect in the behavior of the mother. There was no indication that the groups differed.

In a mean of 24% of the units, the 24 children were receiving positive affect (a display of warmth and pleasantness to the child) from the mothers (LU = 21%; LR = 19%; MU = 29%). There was no evidence of significant differences across groups.

Negative affect (evidence of displeasure, disapproval or unhappiness) was displayed to the 24 children on the average in 18% of the units with the mother (LU = 21%; LR = 29%; MU = 10%). Here there was evidence that the groups differed ($H = 8.57$, $p = .014$).

For the children in the low-income homes, EFU characterized by negative affect and those characterized by positive affect occurred in about the same percent of all the units. For the children in the middle-income families, the percent of units characterized by positive affect was almost three times the percent coded negative affect. These relative differences suggest that the children in these groups had very different experiences as measured by Agent Affect.

Another variable coded in the present study, Congruence, or harmony versus conflict between the mother and the child in the EFU, can also be seen as related to the warmth-hostility dimension. This appeared to be related rather closely to the question asked of mothers in the Sears et al. study, i.e., how the mother "gets along" with the child. In about 43% of the units on the average for these 24 children, there was conflict in the EFU. The low-income children were receiving a significantly higher percent of conflict units than the middle-income children, but the adjusted frequencies of such events did not differ significantly across groups.

There were units in which children experienced neither harmony nor conflict with the agent; 22% of the units on the average were units with this neutral characteristic with no significant difference apparent across the groups.

Harmony was coded as the experience on the average in 33% of the units with the mother. Here there was a statistically significant difference across groups in terms of both the adjusted frequency data and the percent data. The middle-income children received units in which the goals of the agent matched the child's goals more frequently and in a greater percent of the units than did either of the low-income groups. Despite this, however, as noted above, the affect expressed to all the children was more often than not a neutral sort.

Dependency

Other investigators when studying dependent behavior have considered mothers' reports on how close the child wished to be to the mother and how much attention the child demanded. Both Yarrow et al. and Sears et al. asked these questions; in addition both requested information about the child's reaction to separation from the mother. Other information was requested in the interviews from both investigators, but only the questions about closensss and demanding attention are those for which data from the present study seemed to be relevant.

The variables regarding who starts the unit and the proximity of mother and child seemed appropriate here. In Initiation, the category, "A responds to action from S directed to A," provided information about the demand made upon the mothers by the child. This category has been coded precisely for the purpose of singling out only those units in which the child takes the initial action. When the mother was the agent she responded to a request from the child in an average of 35% of the units; the range for requests to the mother was from 15% to 62% and there appeared to be no differences across the three groups.

The Mother Proximity variable provided data on how close the mother and child were on every unit but did not indicate who stayed close to whom. For a measure related to clinging on the part of the child, the first three categories of mother proximity appeared to be a close approximation to actual clinging behavior. In 36% of all 8,899 units (regardless of who the agent was) the children were either closely adjacent to, being touched by or being held by the mother. The range across all 24 children was wide

11% to 72%; 12% - 72% (LU), 12% - 43% (LR), 11% - 53% (MU). When the mother was the agent she was closely adjacent or closer in an average of 57% of all the units.

The two indices used to measure "dependency" in the present study, closeness and attention demanding, were tested using the Spearman rank correlatin coefficient. The two measures were not correlated, rho = .2143, t = 1.59. The children who demanded attention frequently were not the same children who remained close to the mother. Because the proximity measure did not indicate who instigated the staying close, the measure does not indicate the same behavior as clinging although it is a close approximation.

Aggression and the Handling of Aggression

> Since the beginnings of systematic child study, the aggressive responses of young children have interested investigators. Few dimensions of children's social behavior have received as much attention in psychological research [Yarrow et al., 1968, p. 56].

Specific behaviors which have been rated as indicating aggressiveness have varied with the investigator. Although there is general agreement that aggression can be defined as intent to hurt or bringing hurt or injury to another person, the interpretation of any given behavior in a particular situation as aggressive behavior proves difficult.

Direct overt aggression, such as hitting, is usually considered a clearly aggressive act for all investigators. Such aggressive acts exhibited toward parents have been of particular concern to most investigators. Aggression, as such, was not coded in the present study. However, one goal class was devoted to the agent's response to direct attack on the agent or toward the

agent's property. From this goal class, using only those units in which the mother was the agent it was possible to identify all units in which the goal of the mother was to protect herself or her property from the subject's attack. There were only three such units among the 4,224 units across all subjects in which the mother was the agent. This lack of such units might be attributed to the influence of the presence of the observer. However observers witnessed instances of mothers in more than one family slapping or hitting a child with a belt, and numerous other instances of behavior on the part of the child which was clearly recognized by the child as being forbidden behavior. These events led the observers to feel that their presence was not inhibiting to either the mother or the child. Further the lack of aggression did not stem from lack of conflict; on the average 38% of the mother units were units in which there was clear evidence of a conflict between the agent's goal for the child and the child's goal for himself. It is quite possible that by the age of three, overt aggression has given way to more subtle behavior, e.g., Child 14, on being forbidden to leave the house to play, muttered some very angry words to himself, well out of earshot of the mother. He apparently had long since learned not to express this sentiment directly to the mother.

Aggression to siblings often took a playful or semi-playful form. Serious aggressive acts which were interfered with by the mother occurred rarely; only 12 units of the 4,224 units in which the mother was the agent were those for which the goal of the mother was classified either as "S not to attack other person" or "S to play fair, not quarrel."

It would be possible to code the specimen records for aggressive acts of the child if specific behavior manifestations of aggression could be identified. This has not been done in the present analysis. The data reported here indicate only that behavior of the mother which was directed toward protecting herself or another person from aggression by the child was a rare occurrence in these records.

Disturbances in Everyday Life

Two intriguing studies (Jackson & Wolfson, 1968; Wolfson & Jackson, 1969) reported the interferences with the "natural pursuit" of the desires of three- and four-year-old children. The earlier of the two studies was done in a nursery school with 97 children as subjects; the later study was conducted with 42 subjects in an outdoor public playground and a public beach located in the same general geographic area as the nursery school. The major question underlying the investigation was simply: How often do these children undergo experiences which might be interpreted as disruptive or as interfering with the natural pursuit of their desires (Jackson & Wolfson, 1968)? A second purpose was to make a start on developing a taxonomy of observed behaviors of three-year-olds. Fifteen two-minute observations per child were made in the first study and one thirty-minute observation was made per child in the second. Notes were taken and full descriptions of the episodes involving disruption were then dictated. Coding was done according to seven categories: Desire of the subject versus (1) desire of another child; (2) teacher (adult) expectation; (3) his own inability; (4) teacher (adult) overlook; (5) clutter and crowds; (6) environmental limitations; (7) institutional restriction.

For the nursery school situation 587 episodes were reported involving disturbances during the total of 48 hours of observation of 97 children. In the out-of-doors situation, 218 disturbances were identified in observations of 42 children for a total of 21 hours of observation time. (This observation time is here estimated, based on the report of 30 minutes for each of the 42 children.)

The description of these "episodes of disturbances" when another person was involved were such that they seemed to bear a striking resemblance to the units identified in the present study as Environmental Force Units, e.g.,

> Subject 17 was trying to explain something to a boy who was sitting across the table from him. The boy couldn't hear because there were two or three children between them talking. Subject 17 repeated the same phrase four times, each time getting louder, and the girl sitting between them was talking across the table and her voice was getting louder and louder too. [Jackson & Wolfson, 1968, pp. 361-363].

This would be considered one distrubance oy Jackson and Wolfson and is close to the level of comprehensiveness of EFU.

In order to compare the data on disturbances with similarly classified, i.e., conflict, units in the EFU study, it was necessary to isolate those disturbances in the Jackson/Wolfson data which were constraints imposed by other people (other child, teacher expectation, teacher overlook) and to compute a rate per minute for these disturbances. This manipulation of the data yielded a figure of 0.15 disturbances per minute per child in the nursery school, and 0.14 disturbances per minute per child in the out-of-doors situations.

In the present EFU study, the 24 three-year-old children were experiencing total input from others at an average rate of 1.63 Environmental Force Units per minute. It is to be remembered that this was the rate for these children in home situations and does not give any indication of what the total rate of input might be in other settings such as the nursery school situation, the beach or the park. Other studies have indicated that there is a difference in EFU rate from setting to setting. P. Schoggen (1964) found that rate of occurrence of EFU for first through fourth grade children was consistently higher at home than at school.

However, the fact that input occurred at 1.63 EFU per minute at home provides a base for considering the rate of any particular kind of input, e.g., "disturbances."

From the coding of the EFU, it was possible to look at only those units which were similar to "disturbances" as defined by Jackson and Wolfson. All EFU in which there was conflict of goals between agent and child fit closely this definition of child's desire versus other child's desire, teacher or adult expectation, and teacher or adult overlook. Because the children in the Jackson and Wolfson studies were for the most part middle class, only the data from the middle-income children in the present study were used.

The rate of conflict per minute in these middle-income homes was 0.69, considerably higher than the figures reported by Jackson and Wolfson. If in fact the data are comparable, it would appear that the nursery school and the outdoor situations of the subjects in the Jackson/Wolfson study were places of relative peace and tranquility, compared to the home life of the subjects of the present study. In fact nursery schools are places designed

for children and therefore should be places of relatively less conflict than other more adult-oriented places. Parks and beaches tend to be places where only a few sanctions hold, and again, should provide situations for relatively conflict-free interpersonal relationships.

Wolfson and Jackson report concern about the "bumpiness" of life:

> Apparently life is as "bumpy" for the young child on the beach or the playground as it is for him in the classroom. Obviously we are still at a loss to determine what effect, if any, this "bumpiness" might have on a child's development, but the pervasiveness of this feature of life is more clearly established by this second study. There remains the possibility, of course, that in other contexts, such as the home, the child's experience is relatively free of these types of constraint. But even if this were so (and evidence on this point is badly needed) it would not appreciably reduce the significance of these two sets of findings [Wolfson & Jackson, 1969, p. 6].

The evidence which is badly needed is more than whether there are as many constraints at home for the children in the Jackson/Wolfson studies as in the nursery school, park or beach. The relative experience of disturbances compared to <u>all other experience</u> would provide even more important data relevant to the significance of the "bumpiness" in the children's lives, just as the relationship of 0.69 conflict EFU per minute to a total input of 1.63 EFU per minute helps put even this high rate of conflict into perspective.

Summary of Results

The children were clearly receiving a variety of social inputs, but there were similarities and differences across groups. Children experienced an amount of input as measured by rate of EFU, duration of EFU, and complexity of structure of the EFU which indicated no differences across the three groups. On the average, input occurred in the form of relatively short units at the rate of 1.63 EFU per minute. The units tended generally to occur in isolation or in simple overlapping patterns. Agents were most frequently female; the mother was the most active agent in the environment for most children. Agents were responsive to, attentive to, and interfering with the children in one group as often as another. Neutral affect of both the agent and the subject was a feature of a high percent of the units for most children.

Differences across the three groups tended to occur on a low- versus middle-income dimension. The eight middle-income children as compared with the 16 low-income children received a significantly higher percent of the units in which they were (1) given information about their own status or position, (2) requested to tell the agent something, (3) requested to acknowledge or accept something, (4) participating in a moderate number of cyclical exchanges, (5) given an obligation for specific behavior, (6) in harmony with the agent's goals, (7) provided with verbal messages, and (8) using verbal messages themselves. The low-income children as compared with the middle-income children received a higher percent of the units in which they were (1) requested to do something, (2) requested to stop doing something, (3) given negative feedback, (4) receiving a negative designation, (5) in

conflict with the agent, (6) using only signal messages themselves, (7) using only contact messages themselves, and (8) receiving negative affect from the agent.

No differences on any available were seen when the sample of urban black families was compared to the urban white families.

Gray et al. provided five statements describing differences in the early experience of children from deprived as compared to middle class homes. The present data yielded no support for their statement that low-income children receive less input from the environment. However their suggestion that low-income children receive less adult administered input was partially supported in that the mothers were the agents in a higher adjusted frequency of units in the middle-income than in low-income homes; these frequencies did not represent significantly different percents, however. The statements regarding the content of behavior were supported more strongly by the present data. Children in the 16 low-income homes did receive less verbal input, more behavior which could be regarded as inhibiting, and less input directed toward specific behavior of the subject.

Several child rearing dimensions were discussed in terms of the total context of that behavior as observed in the 24 families. On a warmth-hostility dimension it could only be said that the predominant experience of most of the children was neutral as indicated by the affect shown by the agents in EFU. This was surprising inasmuch as there was a clear conflict of goals between the subject and the agent in nearly 40% of the units on the average. Aggression to the mother was very rarely observed; these children had apparently already learned to express such feelings in some

form other than overt aggression. Serious aggression to siblings and peers by the subject was not commonly interfered with by the mothers or anyone else. Children who stayed close to the mothers did not appear to be the same children who demanded attention frequently, providing little support for using these two dimensions together as a single measure of dependency.

Two studies by Jackson and Wolfson prompted us to check the EFU for units similar to events identified as "disturbances" in their studies. The children in the home situations of the present study were experiencing "disturtances" at a much higher rate than did the children in the nursery school or outdoor settings described by Jackson and Wolfson. But even at home nondisturbance EFU outnumbered disturbance units better than two to one. The base provided by the total numbers of EFU placed the specific behavior, "disturbances," in perspective.

Summary

Three-year-old children in families representing urban and rural low-income and urban middle-income groups were observed in ordinary activities of everyday life in their own homes. Trained observers made specimen records during eight observational periods ranging in length from ten to 50 minutes and totaling three to four hours for each of 24 children. The completion and duplication of these specimen records fulfilled the archival purpose of the research--to create a substantial library of theoretically neutral observational data as permanent documentation of actual life experiences in the everyday lives of three-year-old children from different socioeconomic backgrounds. The potential of this library has already been illustrated through the work of several other researchers who have used these specimen records to investigate a number of problems of special interest to them.

The analyses of the specimen records in the present study were designed (1) to describe and quantify the kinds of active environmental inputs received by these children; (2) to assess relationships between these experiences and socioeconomic status; (3) to explore with these data the suggestions of Gray et al. concerning the characteristics of the social environment of children in disadvantaged homes; and (4) to relate the findings to certain data in the research literature on child rearing.

The basic analytical unit was the Environmental Force Unit (EFU) defined as an action of an environmental agent (associate) of the child subject which is drrected toward a particular goal or end-state with respect to the child. Evidence is presented showing that EFU can be reliably identified by different analysts working independently. In the second step of the

present analysis, each EFU was described in terms of a number of variables selected to assess important aspects of the child's behavior and social environment.

The results of this analysis featured wide individual differences, some important similarities across the three socioeconomic groups and some interesting intergroup differences. On the average, input occurred in the form of relatively short units at the rate of 1.63 EFU per minute. Environmental agents were most frequently female and the mother, not surprisingly, was the most active agent in the environment for most of these three-year-old children. Agents were responsive to, attentive to and interfering with the children in one group as often as in another. Neutral affect was displayed by both the agent and the child subject in a high percent of the EFU for most of the children.

Children in middle-income homes as compared to children in low-income homes had EFU characterized by a higher percent of units in which they were (1) given or asked for information, (2) engaged in more extended interaction, (3) given an obligation to perform some specific action, (4) in harmony with the goal of the agent, and (5) receiving and giving messages through a verbal medium. By contrast, the children in low-income homes, as compared to children in middle-income homes had higher percents of EFU in which they were (1) asked to do or to stop doing something, (2) given negative feedback and prohibiting obligation, (3) utilizing signals or physical contacts in communication, and (4) in conflict with and receiving negative affect from the EFU agents.

No differences could be detected on any of the variables when the sample of urban black families was compared to the urban white families.

Evidence from this analysis failed to support the suggestion of Gray et al. that children in low-income homes receive less input from the environment. However, other suggestions of Gray et al. were supported by data in the present analysis. The children in the low-income homes did receive less verbal input, more inhibiting behavior and less input directed toward specific behavior of the subject.

Results of the present analysis relevant to some dimensions often cited in the child rearing research literature were presented and discussed. On a warmth-hostility dimension, the present findings indicate that neutral affect was the predominant experience of these children as measured by the affect shown by EFU agents. This was all the more surprising in view of the fact that the child subject and the EFU agent were in conflict in the EFU in about 40% of the units. Aggression to the mother was rarely observed and serious aggression from the subject to siblings and peers was not commonly interfered with by the mothers or anyone else. Two commonly used measures of dependency gave quite different results in the present data.

A few simple computations enabled us to compare the present data with those from another study which focused on "disturbances" in natural but non-home situations. The present data indicate that such disturbances occur much more frequently at home than in the nursery school and outdoor settings used in the other study.

It is often asserted that, because it is obviously impossible in observational research to "observe everything," it is therefore important to specify

in advance with precision exactly what "events," "acts," or "behaviors" to record. In such investigations observers are carefully trained to watch for only the specific behavior relevant to the particular hypothesis under examination. This conception of observational research has often resulted in the use of precoded check-lists in which the observer merely indicates at stated intervals whether a particular kind of behavior is, in fact, occurring. The data from such studies are expressed in terms of frequency of occurrence, e.g., "number of aggressive acts" per unit of time or in terms of percent of intervals sampled, e.g., 14 out of 20 15-second intervals, in which the behavior of interest occurred. Such studies have provided interesting data with respect to particular hypotheses.

However, one special advantage of observational research in natural life situations as contrasted with the laboratory lies in the fact that it can capture the very richness and complexity of the experiences which surround any given kind of behavior, e.g., "disturbances," "aggressive acts." The frequency of such behavior relative to the total repertoire of which the given behavior is only one part is the kind of information for which observational methods are especially well suited. The sequence of events, the pacing of events both of child behavior and of environmental inputs to the child relate to questions concerning the behavior stream which are not amenable to study in the laboratory.

A few studies of the frequency of events in relation to the total repertoire, e.g., Calkdwell (1969), and of the sequencing of events, e.g, Gewirtz (1969 a, b), Longabaugh (1969), are available. Other approaches to the difficult process of analyzing the ongoing behavior stream have been

tried (Barker, 1963). The analysis of Environmental Force Units in specimen records provides another approach to some of these questions. This analysis provided several illustrations of the importance of looking at a particular kind of behavior or environmental input in the broader context of all other kinds of behavior or environmental events occurring in the child's situation.

Obviously the problems are enormous. Computer programs can be of substantial help in the processing of such data and methodological research involving computer-assisted analyses is just getting started. Despite the difficulties, however, efforts to study systematically the concrete behavior of young children in the context of all the proximal environmental inputs of everyday life appear to be essential. These experiences, as Yarrow et al. (1968) suggest, "contribute significantly to [the child's] behavior and development and are in many respects the essence of developmental theory. An exact understanding is important to science and society [p. 152]."

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APPENDIX A

Summary: Sample of 24 Children

In Three Socioeconomic Groups*

Subject Number	Race & Sex	# of Children in Family	Position of Subject	#Children usually at home	Hollingshead index of social position
Low Urban					
01.	W M	5	3	4-5	7
02.	W F	2	2	2	6
03.	B M	3	2	3	6
04.	B M	4	4	2	7
05.	B F	5	4	2	6
06.	B F	9	5	5-9	Father absent
07.	W F	5	5	2-3	6
08.	W M	10	9	3	6
Low Rural					
10.	W M	3	3	3	7
11.	W F	3	3	3	6
12.	W F	7	5	4	6
13.	W F	5	3	4	6
14.	W M	4	4	4	7
15.	W M	7	6	2-6	6
16.	W M	3	3	3	6
17.	W F	4	2	3	7
Middle Urban					
20.	W F	6	5	2	1
21.	W F	9	8	3	1
22.	B F	3	3	3	1
23.	B M	4	4	1-3	1
24.	W M	3	3	3	3
25.	W M	3	2	3	1
26.	B M	2	1	2	1
27.	B F	4	4	4	1

* All Subjects are Three Years Old

APPENDIX B

90/91

Excerpt from Specimen Record

Subject: Winton Clark
Date: March 7, 1968
Time: 6:07-6:39 p.m.
Observer: M. Schoggen
Subject/Observation No. 14.06

Background

The Clark family lived in a brick house in a rural area. The house was on a rock road approximately 15 miles from the main highway. The small two bedroom house seemed larger because the L-shaped living room-kitchen area was open and light. The conveniences provided by a hot water heater and a complete bathroom were appreciated by the entire family; their previous house lacked both features.

Mrs. Clark was in her mid-to-late twenties. She quit school before finishing high school to get married. Because she worked outside the home, the children spent some time at the grandparents. Mr. Clark was in his early thirties and was employed as an unskilled worker. Despite his large size and rather rough manner, he displayed real affection for the children. Although both parents held jobs their income was very modest.

Mrs. Clark was often late coming home in the evening but she regularly prepared nutritious meals for the family. There were numerous toys in evidence suited to the age of the children. The newspaper was delivered daily, but only one or two magazines of the True Confessions type were ever seen.

At the start of this excerpt the father was sitting in the living room talking with the mother who was preparing dinner in the kitchen area. Greg (age 11) was on the couch with Anita (age 8) near him on the floor working on a scrapbook. The television set was on but neither child paid more than intermittent attention to the set. April (age 6) was on the father's lap. Winton (age 3, the subject) was wandering from the children's bedroom into the living room. He had in his hands a piece of wooden molding about one and a half inches wide and three feet long; this is referred to as a stick in the observation. This he had used several times earlier in the observation to try to reach the light switch in the bedroom.

Time notations are given in the text as elapsed time since the beginning of the observation. At the time this excerpt begins, the observation has been going on for about 12'45"

Without expression change, Winton ambles out of the bedroom, carrying the stick, without apparent concern.

He ambles over to the end table near the door.

He picks up a small plastic soldier.

This he puts in his mouth like a cigarette.

The father is still sitting in the big chair.

With the soldier still in his mouth like a cigarette, Winton ambles toward the bathroom door; his walk looks as if he is imitating an adult male.

13'00" He walks into the bathroom.

The soldier is still in his mouth.

He waves his hands under the dripping faucet very quickly and not at all timed to the dripping faucet.

He carelessly drops the stick en route.

There is a small pail of sponges on the bathtub rim.

Winton turns and walks purposefully over to this bucket.

He searches, rummaging with his hands through the pail of sponges.

He pulls out a yellow-gold sponge.

Carrying the sponge aloft, he walks over to the sink.

He holds it under the faucet, wiggling it back and forth underneath the drips.

He holds the sponge up and looks closely at it to see if it is getting wet.

He puts the sponge back under the faucet and wiggles it back and forth.

He looks closely at it.

He squeezes it.

As he squeezes it he brings his hand closer to him.

Some water drips on the floor.

He looks down hurriedly at it.

He takes the soldier out of his mouth with his left hand.

With his right hand he puts the yellow sponge into his mouth.

He sucks and chews on it, twisting the sponge as he does so.

He leans over the tub holding the sponge in one hand and the soldier in the other hand.

I cannot tell what he is doing.

Apparently he gets a piece of soap because he comes up with the soap cupped in the palm of his hand.

Very gingerly he turns his hand over on the piece of soap.

It is already on the soap dish side of the sink.

Winton lets the soap fall on top of the other piece of soap.

He pats it rather gently.
Anita is sitting in front of the door working on a scrapbook. The father is in the chair in the living room just by the kitchen table. Greg is on the couch poking a pencil in a rubber ball. I do not know where April is at this moment. I think she is on her father's lap, however.

Winton puts the sponge back in his mouth and chews and sucks on it.

14'10" He walks over the few steps to the bucket.

He dumps the sponge in the bucket unceremoniously.

As he is still doing this, he begins to wiggle his left arm out of his jacket.

He wiggles the other arm out and lets the coat sort of hang down and drag behind him.

17

He trips over the stick which has fallen down and so he falls across the threshold of the bathroom.

He whimpers slightly.

The father says, "Winton, come over here and I'll pick you up." The father sounds very amused with himself.

"C'mere and I'll pick you up," the father repeats in a warm, friendly tone, still greatly amused at his own wit.

Winton drags his jacket behind him as he walks over toward the wardrobe.

"Okay," says Winton as if he would in a minute.

He approaches the wardrobe as he says this.

Winton opens the wardrobe door.
It is unfastened from the earlier time and actually requires opening the door a bit wider.

F: S to come here and be picked up (tease)

F: S to come here and be picked up (tease)

He throws his coat in. It is still partly on one arm so he just simply thrusts that arm forward and lets the coat fall off it into the heap of clothing in the wardrobe.

He walks the few steps to the father and stands there.

He removes the soldier and then pushes the soldier into his mouth like a cigarette again, in a sort of silly, abrupt gesture.

"That's where you fell down," the father says as if explaining what a silly idea that was.

He pokes Winton on the ear very gently and in a loving way.

Winton says, "Ehhh," as if he does not like it.

He frowns.

Winton turns from the father.

He walks back toward the bathroom.

As Winton approaches the cubby, he notices his stick is sticking out from the area.

He bends down to pick up his stick.

He spanks the stick several good spanks.

He grins broadly as he does this as if knowing what a silly thing he is doing.

He holds the stick at one end to hold it aloft.

He waves it around.

He moves hand over hand on the stick.

He walks toward the bedroom, a few steps.

He very carefully inserts the stick into the jar again, just letting it kind of plunk there.

15'30" He turns and looks very satisfied.

He walks into the living room in a purposeful way.

The mother can be heard talking about what is to be had to eat and who is going to get what.
Some of the food is leftovers and there is not enough of some items to go around.

April is laughing with the father. She is still on his lap.

Winton rubs the soldier into an ashtray on the television set as if stubbing out a cigarette.

He looks closely at what he is doing as he rubs it back and forth.

He leaves the soldier abruptly and carelessly in the ashtray.

He ambles back toward the kitchen table.

The mother has put his pink, divided baby dish at his place.

He stands by his chair briefly.

18 M: S to wash hands before dinner

The mother looks over at him and says somewhat sharply, which is her characteristic tone and does not necessarily mean that she is cross, "Did you wash your hands?"

19 M: S to tell about Jim Reed

An ad comes on television for Jim Reed Chevrolet.

"There's ole Jim Reed," interrupts the father to Winton, in a tone which suggests that Winton would like it.

Hastily Winton leaves the spot near the chair, never responding to the mother's question.

Winton walks over to the television.

He leans against the television as if to get very close to it and says warmly, "There's ole Jim Reed."

The father echoes this.

"What does ole Jim Reed say?" asks the mother as if it is time to get Winton to perform, although I get the impression that they probably do this particular routine rather frequently.

Winton just smiles and looks coy as he looks down at the floor.

"....," he says softly and then lookd down at the floor.

He ambles toward the bathroom as if to get out of this embarrassing situation.

The short ad is over immediately.

Winton walks into the bathroom.

16'20" The mother enters the bathroom with intent and purpose.

"You put your shoes and ..., too," she says somewhat sharply to someone, Greg, I think.

She briskly fixes a washcloth with soap and water for Winton.

She gives it to him in the same brisk manner.

Winton takes it and begins to wash his hands rather slowly.

He reaches up for and gets the small piece of soap he had gotten earlier.

He rubs it across the washcloth.

He rubs his hands with the washcloth, looking at it.

He rubs very slowly.

He looks completely engrossed in this, though in a plaintive, languid way.

He puts the soap back up onto the soap dish.

April squeals on the father's lap.

Apparently the father has teased her once too often.

"She dodn't (sic) get mad," says the father with some amusement.

20

"C'mon," calls the mother routinely calling the family to dinner.

Winton surely hears this, but gives no indication that he does.

M: S to wash hands before dinner

M: S & others to come to dinner

He puts the very center of the washcloth in his mouth and sucks and chews on it.

He smiles broadly around the washcloth as if he enjoys this.

He does not appear to notice my presence at all at this point.

"That's the way you done it," the mother can be heard saying to the father in an accusing tone.
She is suggesting that the father caused April's outburst and is almost reprimanding him for it.

"You want some lotion to put on your face?" the mother says to April as if to placate her.

Winton appears to pay no attention to what is going on in the other room.

The mother goes over and kisses April.

17'25" Winton coughs as he takes the washcloth out of his mouth.

He puts the washcloth over on the sink.

Then he picks up his shoes in his left hand.

He ambles toward the bedroom with them.

21 Greg is on the way to the bathroom.

Greg: S to be teased

Greg makes a move as if to get Winton's stick.

"Stop it! Stop it! That's mine! That's mine!" Winton insists sounding really perturded.

Greg leaves the stick, smirking as if he has been teasing Winton.

Winton picks up the stick from where Greg left it.

Greg makes a move as if to kick Winton.

Winton does not see this.

Greg does not carry the kick out.

Greg does look up at me to see if I see.

He grins sheepishly but it is as if he wanted me to see.

Greg: S to be patted

22 I do not respond, but continue to observe.

Greg reaches over and pats Winton on the head.

Dragging the stick behind him, Winton carries the shoes into the living room.

He carries them directly to the wardrobe.

He dumps them in by just dropping them in on top of everything else.

23 April is still crying quietly.

F: S to be played along with

Winton walks over to the couch carrying the stick.

He lifts up the stick and makes a move as if to hit the father with it.

The father grabs hold of the stick and holds it firmly.

The father is a very big man and a very strong one.

Winton looks at the father with mixed admiration and a little concern.

The father looks at Winton with an attempt at sternness. He is amused however, and it shows.

18'15" "Eh eh eh," says Winton in an annoyed tone, shaking the stick.

His father's arm shakes slightly.

Winton appears to enjoy this.

The father lets go of the stick abruptly.

Winton backs up at least partly as a recoil from the father's sudden release of the stick.

Winton lowers the stick gently.

Greg walks over and sits on the father's lap in a silly way.

The father gooses Greg on the buttocks.

Greg jumps up and shouts with mock annoyance.

Winton stands there holding the stick as if ready to attack the father; he makes no overt response to the comedy between Greg and the father.

24

Greg walks past Winton and taps him lightly on the head, teasing but with intent to annoy.

F: S not to break anything Greg: S to be teased

Winton blanches almost imperceptibly but gives no other sign that Greg's message has gotten through.

25

Winton walks, carrying the stick aloft, through the living room.

"Don't break nothin', boy," warns the father.

"Greg, tum, tum, tip, tupper," Winton chants rather happily. I am not sure if these are real words or not.

He walks on into the bedroom carrying his stick.

As he gets through the bedroom door he allows the stick to fall to the dresser top.

I am not able to see this because it is behind the door.

He apparently knocks something to the floor.

He looks very startled.

"Down," he says with concern in his voice.

He looks down at what has fallen.

Apparently he decides it is nothing important, because his face looks relieved.

He picks up his stick.

He walks over to the wall where the light switch is.

He pounds his stick lightly against the wall.

As before he then tries to push the light switch down with the stick, holding it at one end and using the other end to push the light switch down.

Winton has great difficulty controlling the stick at all. It keeps slipping off the switch.

He works at this very hard for several seconds.

He appears to be completely engrossed in trying to turn off the light.

Hand over hand he moves his hands to the end of the stick closest to the wall.

Supporting it that way with the stick hanging over his head, sticking way back, he tries to push the light switch down.

The stick keeps slipping off the switch.

He tries again and again.

He looks over at me hopefully, winningly.

I give him no response.

"I can't turn this old light off," he complains with a clear implication that I should do it.

"You turn it off!" he orders leaving no room for argument.

I just look at him, and keep observing.

"Okay!" he says with finality, no longer looking my way.
It is almost as if it was worth a try.

He stretches on tiptoes.

He tries to reach the switch with the end of the stick nearer the wall.

It slips off.

He tries again and again.

It continues to slip off the switch.

He looks over at me as if hopeful that I might actually turn it off.

He walks toward the door.

He then steps on a bottle cap which may be the thing he knocked off the dresser moments before.

"Oh," he says as if surprised; the rough side is up.

He kicks the cap under the door without concern.

He puts his stick down in the jar.

He looks at it carefully.

He closes the door so that I am unable to see him for a moment.

I think this has to do with his maneuvering the stick and the jar and does not have to do with keeping me out.

Pulling the jar by hanging onto the stick, and pushing down and pulling at the same time, he maneuvers the jar behind him as he eases himself out the door.

As he comes edging out the door, his left arm still is inside the door, pulling on the stick and the jar.

I can hear the stick and the jar rubbing across the floor.

20'20" He opens the door again pushing the jar with the door.

He walks purposefully into the bedroom.

He takes the stick out of the jar.

He holds the stick in front of him, aloft.

M: S & others to come to dinner

With both hands he pounds with the stick on the bed very hard.

The mother calls routinely, "Come. Let's get to the table."

"C'mon," she calls in the same tone, "Anita, Winton, April, Greg."

Immediately Winton walks, carrying the stick, to the little cubby area.

He throws it in as before.

M: S & others to come to dinner

It lands, supported somehow on top of the water heater, which means it sticks out about two feet in the passage-way between the living room and the bathroom.

He immediately walks to his place very purposefully as if he has been waiting to be called.

He puts one hand on top of the back of the chair.

With one hand underneath the seat of the chair he pulls it out very efficiently.

26

The mother puts a plate of hot corn bread on the table as he is doing this.

Winton slides into his chair from the left side.

The other children also come to the table at about the same time from their own, independent places, except for Anita who continues to sit on the floor working on the scrapbook.

M: S & others to eat

The mother looks over at her and says with strong annoy-ance, "C'mon now, you haven't been cleaning it up, you've just been playing with it."

Greg tattles eagerly, "Yes, she's just been playing."

21'00" "She has been playing. Okay!" the mother says. She sounds as if she must tone down her annoyance because of Greg's tattling.

F: S to know tomato is apple (tease)

Winton looks down at his food just to see what is there.

27

The father points to the stewed tomatoes in Winton's dish.

The father says, "That's an apple," in an amused tone.

Greg looks over with amusement too, but he does not have any interaction with Winton.

28

M: S to cut tomato

Winton starts to take a whole tomato up in his spoon.

The mother looks over at him and says crossly, "Winton, cut that tomato up."

She is still standing.

"That's an apple," says Greg with amusement to the mother as if she does not understand.

"Well, apple then," says the mother flatly, without amusement.

Immediately Winton sticks his spoon into the tomato and saws it back and forth to cut some of it up.

The mother complains, "I'm so hot." She gasps.

21'50" "Here, Anita, you want some green beans?" the mother asks routinely.

"Yeah," says Anita casually.

The mother is still standing up.

She dumps some green beans on Anita's plate.
In Winton's divided dish are portions of turnip greens, stewed tomatoes, spaghetti, and beans.

The mother goes into the bathroom to wash her own hands

29

As she comes back she bangs into Winton's stick.

She shouts angrily, "I'm gonna throw this stick out in the yard," to Winton.

She does not, however, but tosses it down roughly to the floor so that it is between the wall and the hot water heater; but the other stick Winton used to get his stick out earlier still is sticking out.

She comes stalking into the kitchen carrying some toilet paper to be used as Kleenex.

"What's the matter?" the father asks.

"I just stepped on the blamed thing," says the mother still angry.

Greg giggles.

"Now eat," says the mother to Greg crossly as if annoyed at his amusement at her predicament.

Winton shows no awareness that he is the cause of his mother's annoyance.

M: S & others to eat

M: S to know she is displeased (she will throw the stick out)

30

M: S to repeat

Winton says informatively, "I....."

"Hmmm?" says the mother as if she is thinking of something else.

Winton repeats in the same information-giving tone.
I do not think the mother understands him either.

The mother just nods.

She begins to eat.

Winton takes bite after bite of greens, one right after the other as fast as he can scoop them into his mouth.

He takes another spoonful.

He uses his left hand to push some of the greens onto the spoon.

He puts that into his mouth.

Again he puts the spoon into the dish.

He takes about ten spoonfuls of greens in quick succession this way, using his left hand to help put the greens on the spoon and then lifting the spoon to his mouth.

M: S & others to eat

Greg is giggling in a silly way still about the tomato being an apple.

The mother serves some mashed potatoes to Winton, Anita, and April.

Winton simply continues to eat, paying no attention to this action of the mother.

Winton gets some tomato with the greens this time, getting the greens first and then dipping the spoon into the tomato.
He seems to enjoy this very much.

He scoops up two or three beans.

He quickly eats the beans.

31

F: S to quit scraping spoon

He scratches his spoon around in his almost empty greens' and tomatoes' dish.

"Quit, boy," says the father almost automatically and sounding very gruff.

The mother looks up and says rather warmly with pleasure, to Winton, "You like greens don't ya? If ya eat some spaghetti, I'll give you some greens or some more tomatoes," she adds in an enticing tone to Winton, looking in his direction as she speaks.

Winton grins as she says this; he really appreciates this.

Almost in the same breath the mother says crossly, "Eat right!" to Greg.

"No, apples," Greg corrects with humor in his tone.
He is referring to her comment about the tomato, and appears to simply ignore the reprimand.

"Apple!" echoes Winton still perseverating about the tomato being an apple.

The mother looks mildly amused by this, but continues to eat.

Immediately Winton puts his spoon in his spaghetti.

He takes a healthy bite.

Still chewing it, he says triumphantly, "I did."
He refers to the fact that he has eaten some spaghetti now.

The mother laughs.

She looks over at him still smiling and obviously immediately responding to his eating spaghetti.

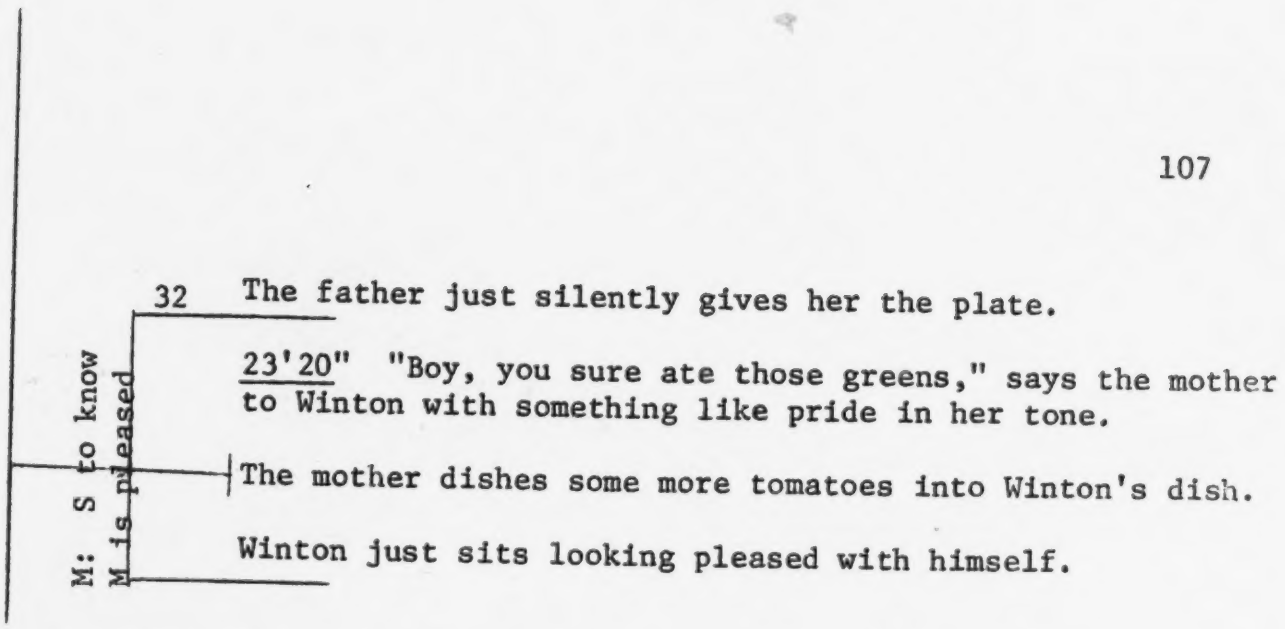
"Give me his plate," she says laughingly to the father.

The father reaches over for Winton's plate.

Winton looks at his mother and smiles broadly. It is as if he knows he has done something amusing.

"He <u>did</u> eat it," says the mother to the father in a tone which suggests surprise and pleasure.

M: S & others to eat


32 The father just silently gives her the plate.
23'20" "Boy, you sure ate those greens," says the mother to Winton with something like pride in her tone.
The mother dishes some more tomatoes into Winton's dish.
Winton just sits looking pleased with himself.
M: S to know M is pleased

Dinner continued for about another 15 minutes. Almost everyone was finished with dinner when Mrs. Clark's parents arrived for a visit.

The total observation was 31 minutes long; there were 41 EFU in the total record.

APPENDIX C

Summary of Log of Visits

Subject Number	No. of Visits	No.of Phone Calls	Dates of Visits 1st-last contact	Dates of Observations	Total Min.in Home
Low Urban					
01.	23	0	9/12/66- 4/10/67	12/ 6/66- 3/21/67	960
02.	14	27	12/21/66- 8/10/67	3/22/67- 8/10/67	520
03.	16	8	1/19/67- 6/27/67	4/12/67- 6/27/67	665
04.	14	0	9/17/67-12/ 7/67	10/ 6/67-12/ 1/67	835
05.	15	0	10/16/67-12/30/67	10/30/67-12/16/67	750
06.	19	0	1/18/68- 3/29/68	2/23/68- 3/21/68	658
07.	19	0	2/28/68- 5/ 9/68	3/25/68- 5/ 2/68	510
08.	20	14	10/13/68-12/14/68	10/24/68-12/ 5/68	660
Total					5558
Low Rural					
10.	11	0	7/ 6/67-10/23/67	7/17/67-10/23/67	580
11.	13	0	7/ 6/67- 8/31/67	7/19/67- 8/24/67	590
12.	18	0	10/16/67-12/19/67	11/ 6/67-12/ 7/67	595
13.	21	0	10/18/67-12/24/67	11/21/67-12/14/67	335
14.	13	1	1/29/68- 4/ 3/68	2/20/68- 4/ 3/68	487
15.	21	0	5/ 1/68-10/30/68	7/29/68-10/30/68	743
16.	16	0	7/16/68- 9/23/68	7/26/68- 9/16/68	531
17.	15	0	7/26/68-11/ 7/68	9/30/68-10/30/68	578
Total					4439
Middle Urban					
20.	11	11	1/10/68- 2/28/68	2/ 7/68- 2/28/68	550
21.	11	16	2/15/68- 4/16/68	2/29/68- 4/16/68	515
22.	12	3	2/21/68- 5/24/68	3/27/68- 5/24/68	553
23.	15	4	3/29/68- 7/25/68	4/16/68- 7/25/68	603
24.	9	12	5/20/68- 8/15/68	5/30/68- 8/15/68	515
25.	12	6	5/20/68- 9/28/68	8/ 6/68- 9/28/68	470
26.	11	3	9/15/68-12/ 3/68	10/10/68-12/ 3/68	490
27.	11	13	10/ 1/68-12/10/68	11/ 6/68-12/10/68	683
Total					4368

APPENDIX D

Catalog of Specimen Records Available: 24 Children in Three Subgroups

Subject Number	Date	Time	No. of Pages	Observer
Low Urban				
01.01	12/ 6/66	4:40-4:54 P.M.	12	B. McCandless
01.02	12/13/66	5:45-5:58 P.M.	13	B. McCandless
01.03	12/14/66	5:40-5:50 P.M.	17	J. Reeves
01.04	1 / 9/67	4:30-4:44 P.M.	25	J. Reeves
01.05	1 /30/67	3:12-3:30 P.M.	24	B. McCandless
01.06	2 /13/67	3:29-3:50 P.M.	28	B. McCandless
01.07	2 /28/67	3:20-4:00 P.M.	51	D. Schoggen
01.08	3 / 2/67	2:12-2:42 P.M.	45	B. McCandless
01.09	3 / 7/67	3:20-3:52 P.M.	56	D. Schoggen
01.10	3 /21/67	1:30-1:50 P.M.	33	B. McCandless
02.01	3 /22/67	4:20-5:00 P.M.	44	D. Schoggen
02.02	4 /20/67	5:16-5:46 P.M.	39	B. McCandless
02.03	5 /16/67	5:25-5:54 P.M.	40	B. McCandless
02.04	6 /26/67	5:10-5:25 P.M.	17	D. Schoggen
02.05	7 /18/67	5:00-5:50 P.M.	46	D. Schoggen
02.06	7 /25/67	4:50-5:03 P.M.	15	B. McCandless
02.07	7 /28/67	5:47-6:19 P.M.	42	D. Schoggen
02.08	8 /10/67	4:20-4:45 P.M.	19	B. McCandless
03.01	4 /12/67	11:30-12:05 P.M.	47	D. Schoggen
03.02	4 /21/67	11:25-11:40 A.M.	29	C. Hogan
03.03	4 /25/67	11:45-12:16 P.M.	44	D. Schoggen
03.04	5 /13/67	11:55-12:26 P.M.	37	D. Schoggen
03.05	6 / 6/67	11:35-11:53 A.M.	26	D. Schoggen
03.06	6 / 9/67	11:20-12:04 P.M.	35	M. Scott
03.07	6 /21/67	11:25-11:53 A.M.	15	M. Scott
03.08	6 /27/67	11:40-12:27 P.M.	44	M. Scott
04.01	10/ 6/67	11:44-12:14 P.M.	29	M. Sweeney
04.02	10/13/67	12:28-12:54 P.M.	21	M. James
04.03	10/19/67	12:20- 1:00 P.M.	25	M. Sweeney
04.04	10/25/67	12:15-12:45 P.M.	26	M. James
04.05	10/27/67	12:15-12:33 P.M.	27	M. Sweeney
04.06	11/ 2/67	11:40-12:14 P.M.	33	M. Sweeney
04.07	11/ 8/67	12:25-12:56 P.M.	37	M. Sweeney
04.08	11/17/67	11:06-11:35 A.M.	50	M. James
04.09	12/ 1/67	12:15-12:45 P.M.	33	M. Sweeney

Catalog of Specimen Records (Cont.)

Subject Number	Date	Time	No. of Pages	Observer
Low Urban				
05.01	10/30/67	1:00- 1:25 P.M.	32	M. James
05.02	12/ 4/67	12:25-12:52 P.M.	29	M. Sweeney
05.03	12/ 5/67	11:45-12:17 P.M.	29	M. Sweeney
05.04	12/ 6/67	11:55-12:26 P.M.	45	M. James
05.05	12/ 9/67	12:55- 1:24 P.M.	43	M. James
05.06	12/10/67	11:50-12:20 P.M.	33	M. Sweeney
05.07	12/11/67	12:05-12:41 P.M.	63	M. James
05.08	12/14/67	9:25- 9:47 A.M.	23	M. Sweeney
06.01	2 /23/68	11:41-12:10 P.M.	47	M. James
06.02	2 /29/68	12:13-12:45 P.M.	43	M. James
06.03	3 / 5/68	11:40-12:30 P.M.	31	M. Sweeney
06.04	3 / 8/68	10:55-11:27 A.M.	35	M. Sweeney
06.05	3 /12/68	12:15- 1:30 P.M.	38	M. Sweeney
06.06	3 /13/68	1:32- 2:03 P.M.	32	J. James
06.07	3 /14/68	12:15-12:47 P.M.	38	M. Sweeney
06.08	3 /21/68	12:42- 1:13 P.M.	54	M. James
07.01	3 /25/68	11:55-12:18 P.M.	36	D. Schoggen
07.02	4 / 4/68	11:50 12:33 P.M.	55	E. Brown
07.03	4 / 8/68	11:55-12:24 P.M.	38	E. Brown
07.04	4 /11/68	11:54-12:15 P.M.	34	D. Schoggen
07.05	4 /15/68	11:54-12:21 P.M.	38	E. Brown
07.06	4 /18/68	11:53-12:13 P.M.	37	D. Schoggen
07.07	4 /22/68	11:50-12:18 P.M.	41	D. Schoggen
07.08	5 / 2/68	11:45-12:20 P.M.	51	D. Schoggen
08.01	10/24/68	12:50- 1:16 P.M.	37	E. Brown
08.02	11/ 5/68	12:38- 1:04 P.M.	50	J. Poole
08.03	11/ 8/68	12:32- 1:00 P.M.	35	E. Brown
08.04	11/12/68	1:10- 1:40 P.M.	58	J. Poole
08.05	11/13/68	11:20-11:48 A.M.	36	E. Brown
08.06	11/20/68	1:20- 1:50 P.M.	54	J. Poole
08.07	11/26/68	12:27-12:58 P.M.	54	J. Poole
08.08	12/ 5/68	12:28-12:56 P.M.	30	E. Brown

Catalog of Specimen Records (Cont.)

Subject Number	Date	Time	No.of Pages	Observer
Low Rural				
10.01	7 /15/67	10:25-10:40 A.M.	13	V. Neuhoff
10.02	7 /25/67	3:50- 4:20 P.M.	24	V. Neuhoff
10.03	8 / 1/67	11:55-12:22 P.M.	24	V. Neuhoff
10.04	8 / 8/67	12:15-12:41 P.M.	39	D. Schoggen
10.05	9 /12/67	10:55-11:25 A.M.	22	B. McCandless
10.06	9 /13/67	11:20-11:50 A.M.	24	B. McCandless
10.07	10/10/67	5:32- 5:58 P.M.	42	D. Schoggen
10.08	10/23/67	12:09-12:37 P.M.	36	D. Schoggen
10.09	9 /19/67	5:50- 6:12 P.M.	18	B. McCandless
11.01	7 /19/67	1:15- 1:57 P.M.	35	M. Scott
11.02	7 /25/67	4:11- 4:34 P.M.	28	M. Schoggen
11.03	7 /27/67	11:25-12:14 P.M.	28	M. Scott
11.04	8 / 1/67	11:44-12:06 P.M.	30	D. Schoggen
11.05	8 / 3/67	1:00- 1:35 P.M.	36	M. Scott
11.06	8 / 9/67	5:10- 5:40 P.M.	37	M. Scott
11.07	8 /17/67	12:20-12:50 P.M.	32	M. Scott
11.08	8 /24/67	11:40-11:55 A.M.	18	D. Schoggen
12.01	11/ 6/67	11:20-11:50 A.M.	39	E. Brown
12.02	11/ 9/67	11:10-11:35 A.M.	41	D. Schoggen
12.03	11/13/67	11:30-12:00 M.	31	E. Brown
12.04	11/20/67	11:48-12:23 P.M.	50	E. Brown
12.05	11/21/67	11:10-11:30 A.M.	30	D. Schoggen
12.06	11/30/67	11:15-11:42 A.M.	41	D. Schoggen
12.07	12/ 4/67	11:40-12:05 P.M.	36	D. Schoggen
12.08	12/ 5/67	11:23-11:55 A.M.	37	E. Brown
12.09	12/ 7/67	11:10-11:30 A.M.	27	D. Schoggen
13.01	11/21/67	11:10-11:36 A.M.	31	D. Schoggen
13.02	11/28/67	11:20-11:40 A.M.	22	D. Schoggen
13.03	11/29/67	3:30- 3:53 P.M.	15	D. Schoggen
13.04	12/11/67	11:00-11:29 A.M.	37	D. Schoggen
13.05	12/11/67	11:43-12:06 P.M.	25	E. Brown
13.06	12/12/67	11:10-11:45 A.M.	31	E. Brown
13.07	12/14/67	11:18-11:36 A.M.	24	E. Brown

Catalog of Specimen Records (Cont.)

Subject Number	Date	Time	No.of Pages	Observer
Low Rural				
14.01	2 /20/68	6:15- 6:44 P.M.	30	C. McLean
14.02	2 /22/68	6:15- 6:42 P.M.	40	D. Schoggen
14.03	2 /27/68	5:53- 6:21 P.M.	43	D. Schoggen
14.04	2 /29/68	6:30- 7:03 P.M.	37	C. McLean
14.05	3 / 5/68	5:50- 6:22 P.M.	39	C. McLean
14.06	3 / 7/68	6:07- 6:39 P.M.	39	D. Schoggen
14.07	3 /13/68	6:20- 6:54 P.M.	44	C. McLean
14.08	4 / 3/68	6:15- 6:45 P.M.	39	C. McLean
15.00	7 /29/68	11:15-11:40 A.M.	51	J. Poole
15.01	8 / 1/68	9:28- 9:54 A.M.	46	D. Schoggen
15.02	8 / 4/68	10:20-10:48 A.M.	45	D. Schoggen
15.03	8 / 7/68	11:20-11:47 A.M.	35	D. Schoggen
15.04	8 /19/68	9:40-10:01 A.M.	34	J. Poole
15.05	8 /21/68	10:28-10:58 A.M.	48	J. Poole
15.06	8 /26/68	1:31- 1:47 P.M.	28	D. Schoggen
15.07	9 /18/68	10:10-10:29 A.M.	32	D. Schoggen
15.08	10/11/68	10:48-11:09 A.M.	41	J. Poole
16.01	7 /25/68	10:05-10:29 A.M.	40	D. Schoggen
16.02	8 / 5/68	11:15-11:34 A.M.	30	D. Schoggen
16.03	8 / 7/68	10:15-10:41 A.M.	41	D. Schoggen
16.04	8 /12/68	12:41- 1:12 P.M.	42	J. Poole
16.05	8 /26/68	12:17-12:52 P.M.	48	J. Poole
16.06	9 / 9/68	11:39-12:09 P.M.	45	J. Poole
16.07	9 /11/68	12:26-12:50 P.M.	35	D. Schoggen
16.08	9 /16/68	12:10-12:39 P.M.	58	J. Poole
17.01	9 /30/68	11:48-12:13 P.M.	46	J. Poole
17.02	10/ 2/68	10:30-10:56 A.M.	38	D. Schoggen
17.03	10/ 8/68	10:23-10:55 A.M.	58	J. Poole
17.04	10/14/68	10:10-10:38 A.M.	46	D. Schoggen
17.05	10/16/68	10:07-10:36 A.M.	49	J. Poole
17.06	10/21/68	10:15-10:46 A.M.	37	D. Schoggen
17.07	10/24/68	10:15-10:46 A.M.	53	J. Poole
17.08	10/30/68	10:30-10:53 A.M.	51	J. Poole

Catalog of Specimen Records (Cont.)

Subject Number	Date	Time	No.of Pages	Observer
Middle Urban				
20.01	2 / 7/68	12:30-12:59 P.M.	27	E. Brown
20.02	2 / 9/68	12:35- 1:03 P.M.	38	D. Schoggen
20.03	2 /14/68	12:25-12:50 P.M.	38	D. Schoggen
20.04	2 /16/68	12:25-12:52 P.M.	25	E. Brown
20.05	2 /19/68	12:40- 1:15 P.M.	54	D. Schoggen
20.06	2 /21/68	12:30- 1:00 P.M.	43	E. Brown
20.07	2 /26/68	12:40- 1:12 P.M.	48	D. Schoggen
20.08	2 /28/68	12:40- 1:10 P.M.	42	E. Brown
21.01	2 /29/68	12:17-12:39 P.M.	30	E. Brown
21.02	3 / 5/68	12:00-12:30 P.M.	49	D. Schoggen
21.03	3 /26/68	12:00-12:21 P.M.	30	D. Schoggen
21.04	4 / 2/68	12:06-12:38 P.M.	38	E. Brown
21.05	4 / 5/68	12:30-12:55 P.M.	35	E. Brown
21.06	4 / 9/68	12:00-12:35 P.M.	26	D. Schoggen
21.07	4 /11/68	12:06-12:42 P.M.	53	E. Brown
21.08	4 /16/68	11:45-12:05 P.M.	39	D. Schoggen
22.01	3 /28/68	4:15- 4:52 P.M.	51	M. Sweeney
22.02	4 / 3/68	4:58- 5:31 P.M.	52	M. James
22.03	4 /11/68	4:10- 4:55 P.M.	38	M. Sweeney
22.04	4 /24/68	5:37- 6:06 P.M.	39	D. Schoggen
22.05	5 / 4/68	12:05-12:29 P.M.	35	D. Schoggen
22.06	5 / 8/68	4:58- 5:30 P.M.	50	M. James
22.07	5 /15/68	4:47- 5:12 P.M.	43	M. James
22.08	5 /24/68	4:52- 5:22 P.M.	40	M. James
23.01	6 /16/68	12:01-12:57 P.M.	61	M. James
23.02	6 /27/68	12:55- 1:30 P.M.	50	M. James
23.03	7 / 9/68	12:49- 1:17 P.M.	46	M. James
23.04	7 /12/68	1:23- 1:54 P.M.	58	M. James
23.05	7 /16/68	12:17-12:43 P.M.	41	E. Brown
23.06	7 /19/68	12:17-12:42 P.M.	37	E. Brown
23.07	7 /23/68	12:00-12:37 P.M.	42	E. Brown
23.08	7 /25/68	11:57-12:25 P.M.	44	E. Brown

Catalog of Specimen Records (Cont.)

Subject Number	Date	Time	No.of Pages	Observer
Middle Urban				
24.01	5 /30/68	12:30-12:58 P.M.	39	D. Schoggen
24.02	6 /21/68	12:15-12:42 P.M.	40	D. Schoggen
24.03	6 /27/68	11:47-12:14 P.M.	45	J. Poole
24.04	7 / 3/68	5:35- 6:10 P.M.	58	D. Schoggen
24.05	7 / 5/68	11:50-12:21 P.M.	39	J. Poole
24.06	7 / 8/68	12:00-12:32 P.M.	41	J. Poole
24.07	7 /11/68	5:35- 6:12 P.M.	59	D. Schoggen
24.08	8 /15/68	1:15- 1:44 P.M.	43	J. Poole
25.01	8 / 6/68	11:55-12:20 P.M.	35	E. Brown
25.02	8 / 8/68	11:55-12:23 P.M.	35	C. McLean
25.03	8 /12/68	11:50-12:17 P.M.	31	E. Brown
25.04	8 /13/68	5:45- 6:30 P.M.	42	C. McLean
25.05	8 /15/68	11:55-12:21 P.M.	32	E. Brown
25.06	9 /11/68	11:35-12:03 P.M.	37	E. Brown
25.07	9 /19/68	11:45-12:30 P.M.	34	C. McLean
25.08	9 /28/68	11:55-12:26 P.M.	44	C. McLean
26.01	10/24/68	8:05- 8:35 A.M.	44	M. Sweeney
26.02	10/29/68	5:05- 5:35 P.M.	47	D. Schoggen
26.03	11/ 7/68	5:00- 5:30 P.M.	48	M. Sweeney
26.04	11/12/68	4:45- 5:10 P.M.	28	D. Schoggen
26.05	11/19/68	7:55- 8:22 A.M.	34	M. Sweeney
26.06	11/21/68	4:20- 4:49 P.M.	45	D. Schoggen
26.07	11/25/68	5:05- 5:20 P.M.	23	M. Sweeney
26.08	11/26/68	7:30- 8:01 A.M.	40	D. Schoggen
26.09	12/ 3/68	8:00- 8:25 A.M.	37	M. Sweeney
27.01	11/ 6/68	5:10- 5:38 P.M.	41	D. Schoggen
27.02	11/ 8/68	6:20- 6:47 P.M.	44	M. Jamso
27.03	11/12/68	4:32- 5:02 P.M.	36	M. Jamso
27.04	11/19/68	5:10- 5:50 P.M.	62	M. Jamso
27.05	11/20/68	4:10- 4:36 P.M.	43	D. Schoggen
27.06	12/ 6/68	5:03- 5:25 P.M.	43	D. Schoggen
27.07	12/ 9/68	5:49- 6:20 P.M.	35	M. Jamso
27.08	12/10/68	5:24- 5:50 P.M.	38	M. Jamso